Catalogue of Salmon Streams and Spawning Escapements of Statistical Area 15 Powell River

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Rapport statistique canadien des sciences halieutiques et aquatiques

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Les rapports statistiques sont produits à l'échelon régional, mais numérotés à l'échelon national. Les demandes de rapports seront satisfaites par l'établissement auteur dont le nom figure sur la couverture et la page du titre. Les rapports épuisés seront fournis contre rétribution par des agents commerciaux.

Canadian Data Report of
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October 1985

CATALOGUE OF SALMON STREAMS AND SPAWNING ESCAPEMENTS

STATISTICAL AREA 15
POWELL RIVER

by

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ABSTRACT

Hancock, M.J. and D.E.Marshall, 1985 Catalogue of Salmon Streams and Spawning Escapements of Statistical Area 15, Powell River. Can. Data Rep. Fish and Aquat. Sci. 536: xiii + 63p.

Catalogue containing each stream's location, spawning distribution, barriers and points of difficult ascent, escapement records and other general data pertaining to the stream. The catalogue also includes a topographical map of the stream and in some cases a sketch map which further describes the surrounding area.

Keywords: British Columbia, Statistical Area 15, Powell River, salmon streams, spawning escapements.

RÉSUMÉ

Hancock, M.J and D.E.Marshall, 1985 Catalogue of Salmon Streams and Spawning Escapements of Statistical Area 15, Powell River. Can. Data Rep. Fish and Aquat Sci. 536: xiii + 63p.

Le présent répertoire donne l'emplacement de chaque cours d'eau, la répartition de fraie, les points de remonte difficile, les données sur les saumons de remonte et d'autres information générales concernant le cours d'eau. On y trouve aussi une carte topographique de l'emplacement du cours d'eau et, dans quelque cas, un croquis décrivant la zone environte.

Mots-cles: Colombie-Britannique, zone statistique 15, Powell River, cours d'eau a saumons, remonte.

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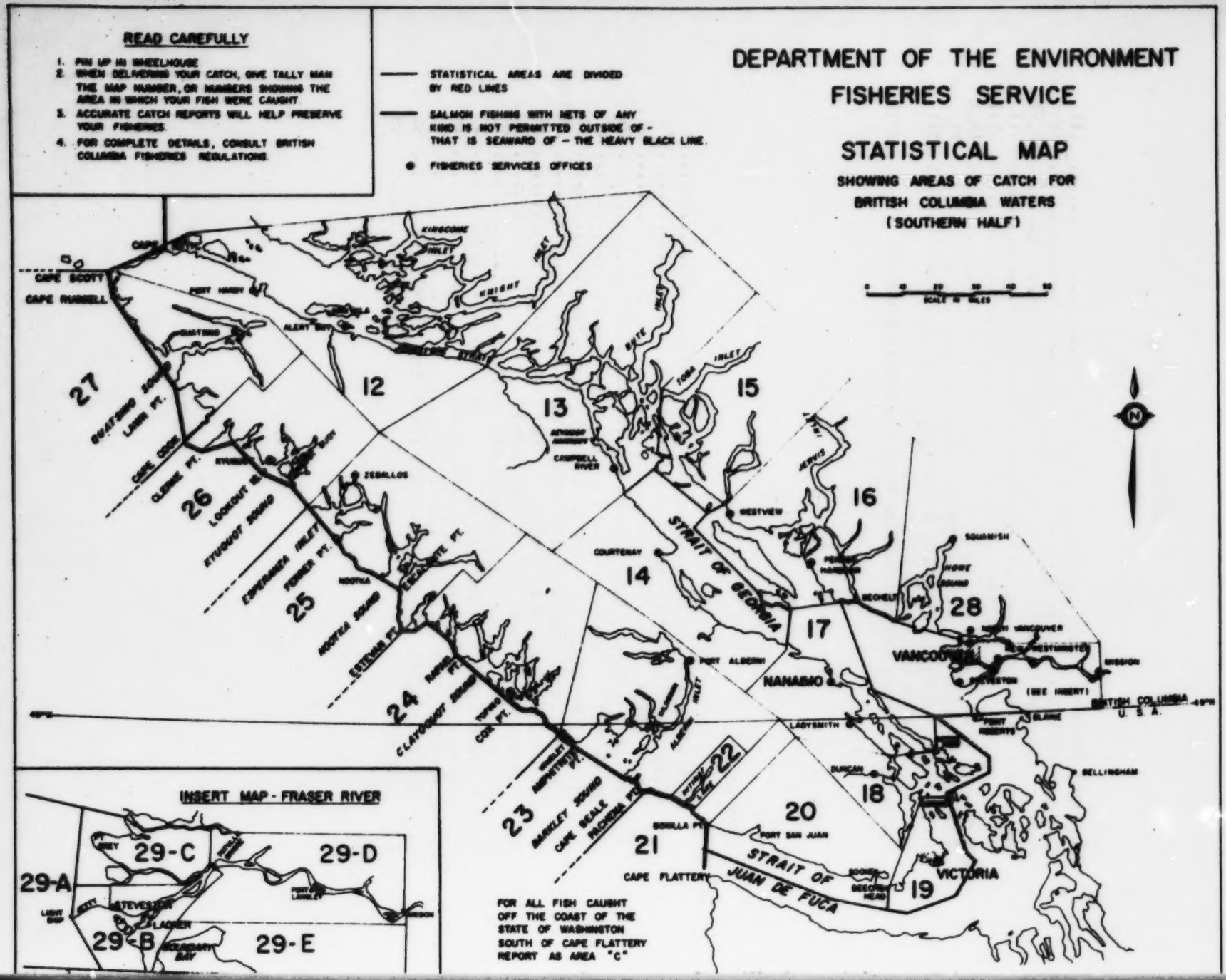
Escapement Summary for Statistical Area 15, Powell River X111

STREAM DATA

1. BREM RIVER 1
2. FILER CREEK (Filer River) 7
3. FORBES CREEK 10
4. (Forbes Bay Creek, Small Creek) 14
5. KLITE RIVER 17
6. LITTLE TOBA RIVER 23
7. (Okeover Creek, Okeover Arm Creek) 28
8. (Pendrell Sound Creek, Pendrell Creek) 33
9. (Refuge Cove Lagoon, Refuge Cove Lake) 36
10. (Salt Lagoon Creek, Black Lake Creek) 40
11. SLIAMMON CREEK (Sliammon River) 44
12. (Store Creek) 48
13. TAHUMMING RIVER 50
14. THEODOSIA RIVER (Twin Rivers, Farm Creek East Fork) 54
15. TOBA RIVER 59


READ CAREFULLY
1. PIN UP IN WHEELHOUSE
2. WHEN DELIVERING YOUR CATCH, GIVE TALLY MAN THE MAP NUMBER, OR NUMBERS SHOWING THE AREA IN WHICH YOUR FISH WERE CAUGHT.
3. ACCURATE CATCH REPORTS WILL HELP PRESERVE YOUR FISHERIES.
4. FOR COMPLETE DETAILS, CONSULT BRITISH COLUMBIA FISHERIES REGULATIONS.
STATISTICAL AREAS ARE DIVIDED BY RED LINES
SALMON FISHING WITH NETS OF ANY KIND IS NOT PERMITTED OUTSIDE OF - THAT IS SEAWARD OF - THE HEAVY BLACK LINE.
FISHERIES SERVICES OFFICES
DEPARTMENT OF THE ENVIRONMENT
FISHERIES SERVICE
STATISTICAL MAP
SHOWING AREAS OF CATCH FOR BRITISH COLUMBIA WATERS (SOUTHERN HALF)
SCALE IN MILES
INSERT MAP - FRASER RIVER
29-A
29-B
29-C
29-D
29-E
FOR ALL FISH CAUGHT OFF THE COAST OF THE STATE OF WASHINGTON SOUTH OF CAPE FLATTERY REPORT AS AREA "c"
CAPE SCOTT
CAPE RUSSELL
QUATSINO SOUND
CAPE COOK
QUEEN PT.
KYUQUOT SOUND
ESPERANZA INLET
FERRER PT.
NOOTKA SOUND
ESTEVAN PT.
CLAYOQUOT SOUND
CAPE BEALE
BARKLEY SOUND
CAPE FLATTERY
STRAIT OF JUAN DE FUCA
STRAIT OF GEORGIA
KINGCOME INLET
KNIGHT INLET
WHITE INLET
TOBA INLET
CAMPBELL RIVER
COURTENAY
COMOX
PORT ALBERNI
NANAIMO
LADYSMITH
DUNCAN
PORT SAN JUAN
VICTORIA
BECHER BAY
WESTVIEW
PENDER HARBOUR
HOWE SOUND
SQUAMISH
VANCOUVER
NEW WESTMINSTER
MISSION
PORT HAMMOND
HARRISON
(SEE INSERT)
BRITISH COLUMBIA
U. S. A.
49°N
BELLINGHAM
PORT ROBERTS
BLAINE
ZEBALLOS
12
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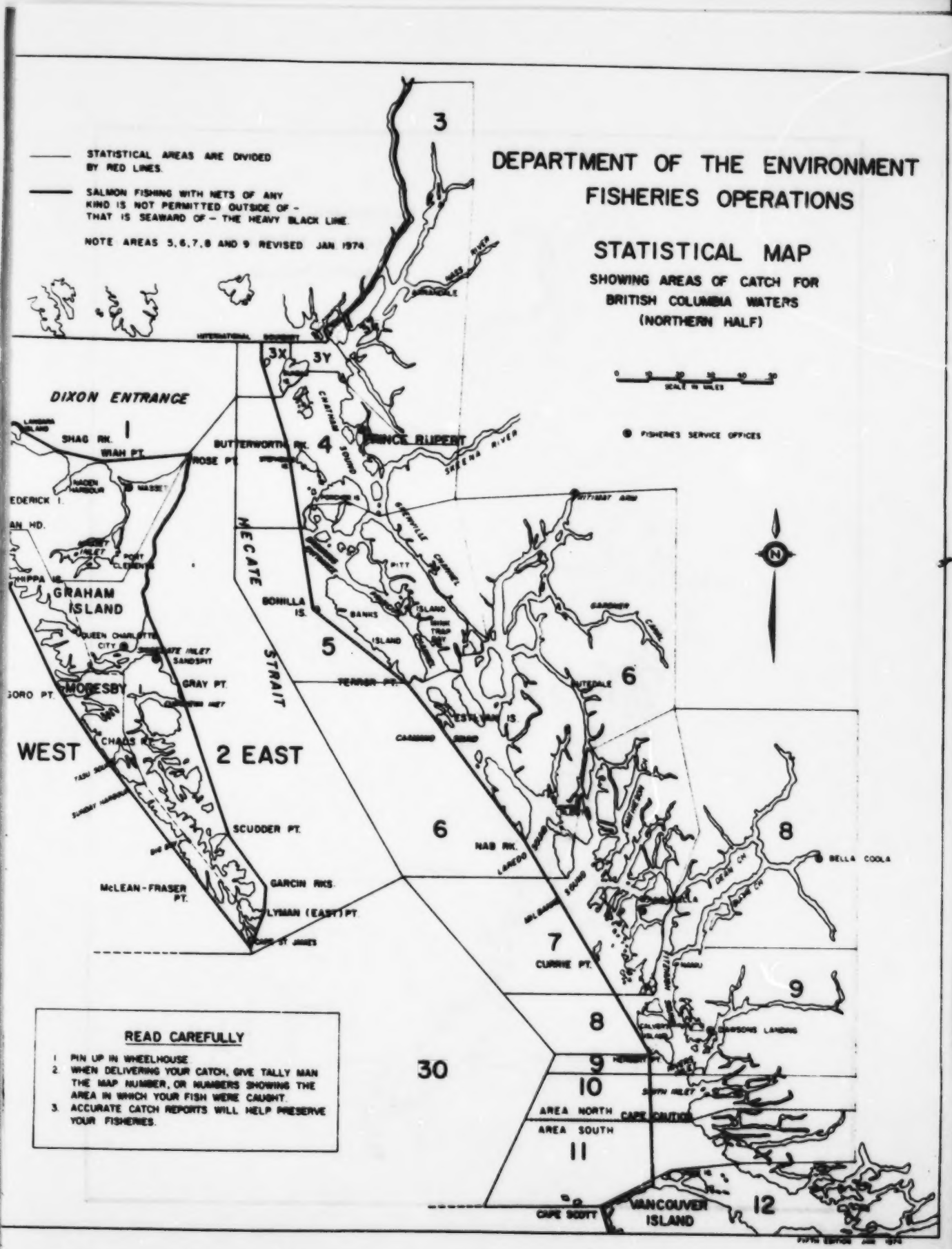
STATISTICAL AREAS ARE DIVIDED BY RED LINES.
SALMON FISHING WITH NETS OF ANY KIND IS NOT PERMITTED OUTSIDE OF - THAT IS SEAWARD OF - THE HEAVY BLACK LINE.
NOTE AREAS 5, 6, 7, 8 AND 9 REVISED JAN. 1974
DEPARTMENT OF THE ENVIRONMENT
FISHERIES OPERATIONS
STATISTICAL MAP
SHOWING AREAS OF CATCH FOR BRITISH COLUMBIA WATERS (NORTHERN HALF)
FISHERIES SERVICE OFFICES
DIXON ENTRANCE
HECATE STRAIT
GRAHAM ISLAND
MORESBY I.
WEST
2 EAST
PRINCE RUPERT
BELLA COOLA
VANCOUVER ISLAND
AREA NORTH
AREA SOUTH
CAPE SCOTT
CAPE CAUTION
SHAG RK.
WAH PT.
ROSE PT.
BUTTERWORTH RK.
BONILLA IS.
TERRACE PT.
GRAY PT.
CHAOS RK.
SCUDDER PT.
McLEAN-FRASER PT.
GARCIN RKS.
LYMAN (EAST) PT.
NAB RK.
CURRIE PT.
3
3X
3Y
4
5
6
7
8
9
10
11
12
30
READ CAREFULLY
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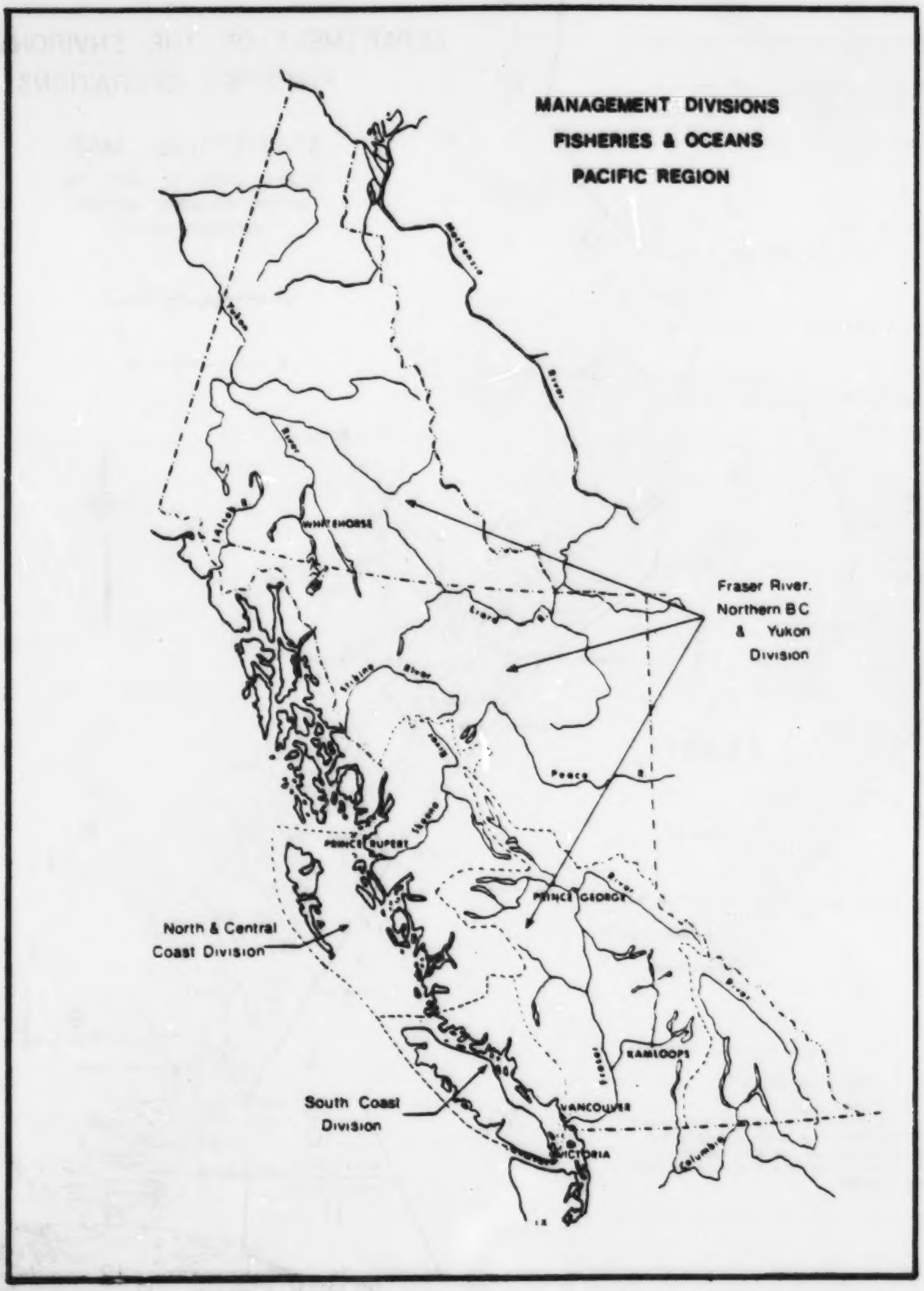
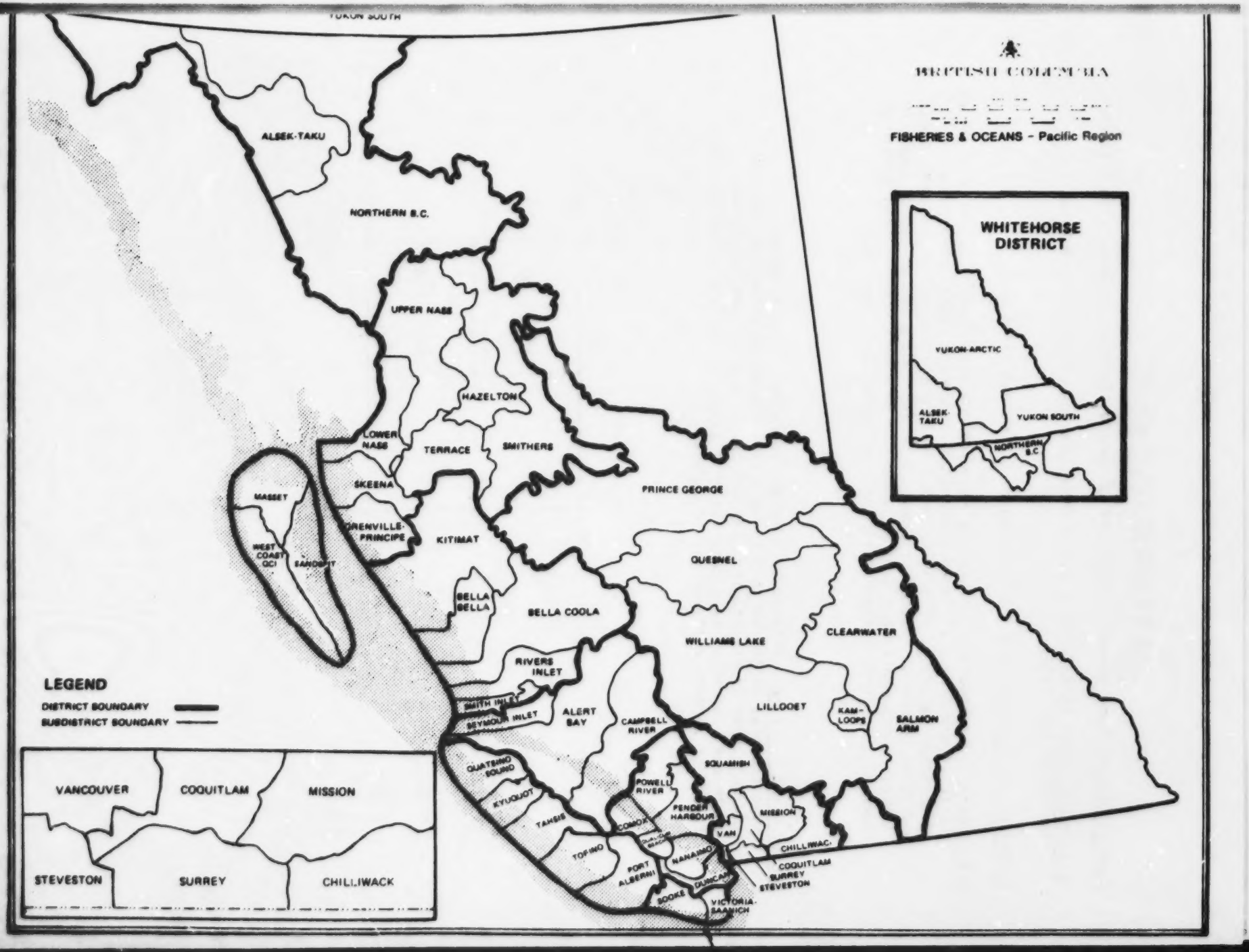
3. ACCURATE CATCH REPORTS WILL HELP PRESERVE YOUR FISHERIES.


MANAGEMENT DIVISIONS
FISHERIES & OCEANS
PACIFIC REGION
Fraser River, Northern BC & Yukon Division
North & Central Coast Division
South Coast Division
WHITEHORSE
PRINCE RUPERT
PRINCE GEORGE
KAMLOOPS
VANCOUVER
VICTORIA


YUKON SOUTH
BRITISH COLUMBIA
FISHERIES & OCEANS - Pacific Region
ALSEK-TAKU
NORTHERN B.C.
UPPER NASS
HAZELTON
LOWER NASS
TERRACE
SMITHERS
SKEENA
PRINCE GEORGE
MASSET
GRENVILLE-PRINCIPE
KITIMAT
QUESNEL
WEST COAST QCI
SANDSPIT
BELLA BELLA
BELLA COOLA
WILLIAMS LAKE
CLEARWATER
RIVERS INLET
SMITH INLET
LILLOOET
KAM-LOOPS
SALMON ARM
SEYMOUR INLET
ALERT BAY
CAMPBELL RIVER
QUATSINO SOUND
SQUAMISH
POWELL RIVER
KYUQUOT
PENDER HARBOUR
MISSION
TAHSIS
COMOX
VAN
TOFINO
NANAIMO
CHILLIWAC.
PORT ALBERNI
DUNCAN
COQUITLAM
SURREY
STEVESTON
SOOKE
VICTORIA-SAANICH
WHITEHORSE DISTRICT
YUKON-ARCTIC
ALSEK-TAKU
YUKON SOUTH
NORTHERN B.C.
LEGEND
DISTRICT BOUNDARY
SUBDISTRICT BOUNDARY
VANCOUVER
COQUITLAM
MISSION
STEVESTON
SURREY
CHILLIWACK

STANDARDS USED ON STREAM DATA PAGE

Name of Stream: Name given in Gazetteer of Canada, British Columbia 1966 edition;

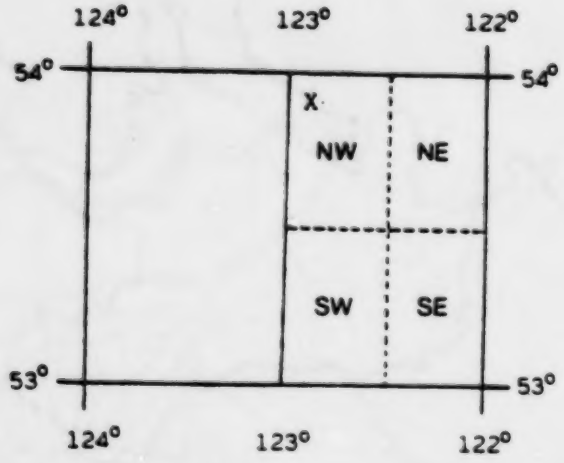
Statistical Area: As defined by D.F.O. showing areas of catch for B.C. waters (Map dated Jan. 1974)

Districts and Subdistricts : As defined by D.F.O. (Map 1985)

RAB Numbers : The Aquatics Unit of the Resource Analysis Branch, Ministry of the Environment have assigned a hierarchical coding system (RAB number) to drainage basins of British Columbia. RAB numbers classify catchment areas and river channels. Further information on RAB coding system can be found in "A Hierarchical Watershed Coding System for British Columbia", RAB Technical Paper #3, Ministry of the Environment, Victoria, B.C. June 1980.

Location and Position: Defined by quadrant indexing. Each geographical quadrilateral of the earth's surface of 1 degree in extent in latitude and longitude is divided into the SE, SW, NE and NW quarters. The south-east corner of each quadrilateral gives the initial point for the figure of reference (Gazetteer of Canada).

EXAMPLE "X"
53° 122° NW



Length: The portion of the stream accessible to spawning salmon.

Drainage: Area in square kilometers of the entire drainage basin feeding the stream.

Discharge: Extremes of maximum and minimum daily discharge for the period of the last 30 years. Discharge date is taken from "Historical Stream Flow Summary", British Columbia, Water Survey of Canada.

Temperature: As described (^{o}C)

Barriers and Points of difficult ascent: Complete and partial barriers to salmon and their distance from the stream mouth. Species likely to be affected may be listed. Both natural and man-made obstructions are defined.

Spawning distribution:
Portion of the stream utilized by each species. Distribution is indicated by brief comments opposite the species.

General remarks: Emphasizes features of stream and spawning populations. Also includes industrial activity, routes of accessibility, etc. The comments and dates are taken from "Annual Reports of Salmon Streams and Spawning Grounds". In some cases, references to additional information not included in the General remarks may be given.

Escapement Records: The escapement represents the mid point of the coded range of escapement for each species. For example: the letter "H" representing 5000-10000 fish would be entered as 7500. Where absolute numbers are provided by Fisheries Personnel, these numbers are entered. N/O means the stream was inspected, but no fish were observed; UNK means there was evidence of fish present, but no estimates were made; NO RECORDS means no escapement records for the applicable years could be found in the escapement files.

Timing: Dates which salmon arrive in the stream, begin to spawn, reach peak spawning period and finish spawning.

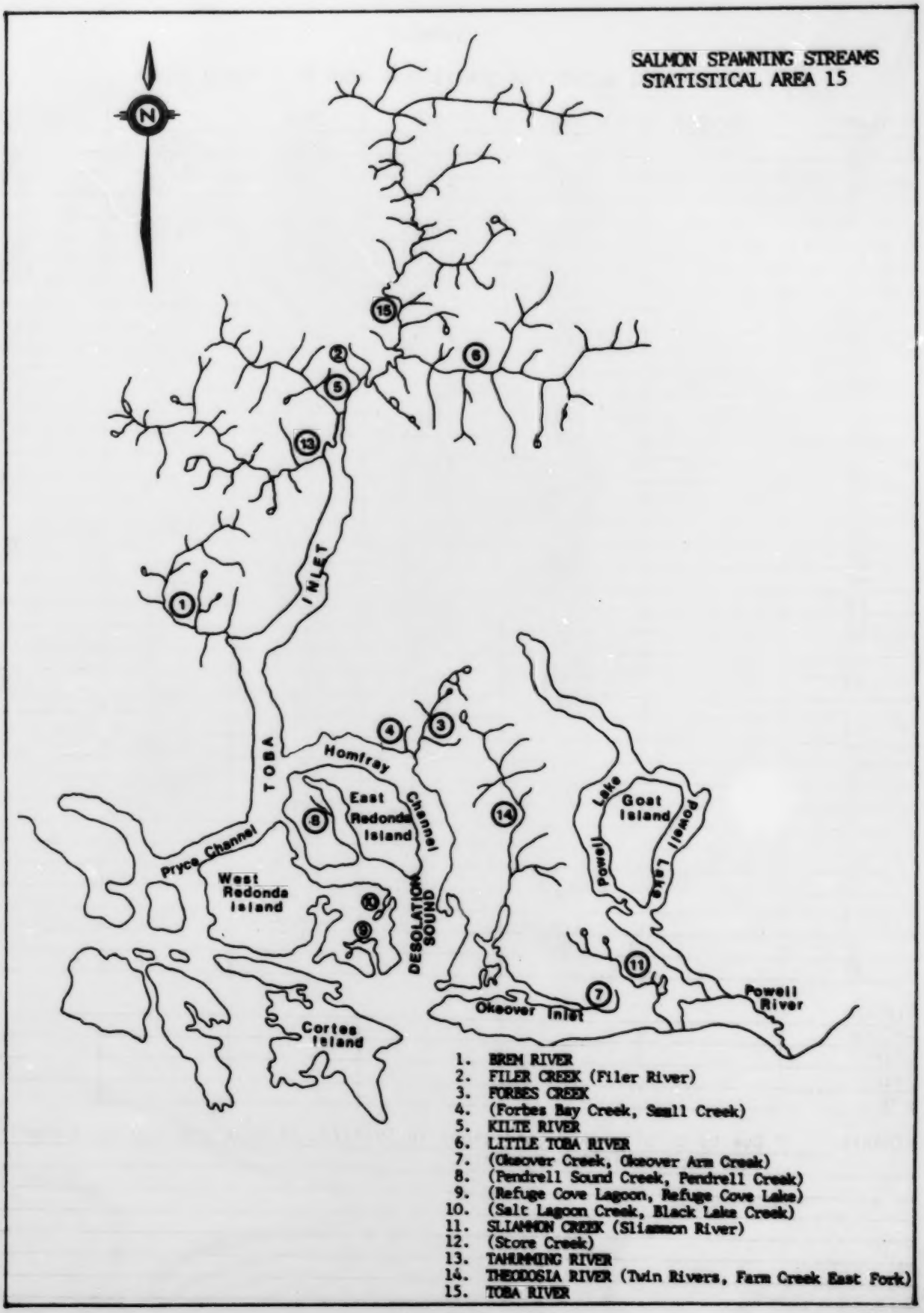
E = early (1st to 10th of the month)
M = mid (11th to 20th of the month)
L = late (21st to end of the month)

NB: Distance references are from the mouth of the stream unless otherwise stated.

FISHERIES & OCEANS - Pacific Region

DISTRICT/SUB-DISTRICT OFFICES

DISTRICT/SUB-DISTRICT	ADDRESS	TELEPHONE	SUB-DISTRICT NUMBER
DISTRICT #1 - Kamloops	202 - 317 Seymour St., Kamloops, V2C 2E9	374-4322	
Salmon Arm	Box 1160, 461 Beatty Ave. NW, Salmon Arm V0E 2T0	832-8037	29K
Prince George	2392 Ospika Blvd., Prince George, V2N 3N5	564-7030	29I
Clearwater	Box 610, Clearwater, V0E 1N0	674-2633	29J
Lillooet	Box 315, Lillooet, V0K 1V0	256-4525	29F
Quesnel	Box 4340, Quesnel, V2J 3J3	992-2434	29H
Williams Lake	540 Borland St, Williams Lake, V2G 1R0	398-6544	29G
DISTRICT #2 - New Westminster	309 - 549 Columbia St., New West., V3L 1B3	524-7181	
Vancouver	309 - 549 Columbia St., New West., V3L 1B3	524-7306	28A
Surrey	309 - 549 Columbia St., New West., V3L 1B3	524-7171	29B
Coquitlam	309 - 549 Columbia St., New West., V3L 1B3	524-7169	29C
Steveston	1255 No. 1 Road, Richmond, V7E 1T7	274-7217	29A
Squamish	Box 85, Squamish, V0N 3G0	892-3230	28B
Mission	Box 3308, Mission, V2V 4J5	826-3664	29D
Chilliwack	Suite 5, 9375 Mary St., Chilliwack, V2P 4G9	792-6011	29E
DISTRICT #3 - Nanaimo	60 Front St., Nanaimo, V9R 5H7	754-3257	
Nanaimo/Ladysmith	60 Front St., Nanaimo, V9R 5H7	754-3257	17
Qualicum Beach	Box 1270, Qualicum Beach, V0R 2T0	752-9712	14S
Comox	Box 1328, Comox, V9N 3R0	339-2031	14N
Duncan	Box 241, 191 Ingram St., Duncan, V0L 3X3	746-6221	18
Powell River	4488 Marine Avenue, Powell River, V8A 2K2	485-9621	15
Pender Harbour	Box 10, Madeira Park, V0N 2H0	883-2313	16
DISTRICT #4 - Port Alberni	Box 280, Federal Building, Port Alberni, V9Y 7N7	724-0195	
Port Alberni	Box 280, Federal Building, Port Alberni, V9Y 7N7	724-0195	23
Quatsino Sound	Box 10, Port Hardy, V0N 2P0	949-6422	27
Kyuquot	Box 549, Tahsis, V0P 1X0	934-6606	26
Tahsis	Box 549, Tahsis, V0P 1X0	934-6606	25
Tofino	Box 48, Tofino, V0R 2Z0	725-3468	24
DISTRICT #5 - Campbell River	215 - 950 Alder St., Campbell River, V0N 2P8	287-2102	
Campbell River	215 - 950 Alder St., Campbell River, V0N 2P8	287-2102	13
Seymour Inlet	Box 10, Port Hardy, V0N 2P0	949-6422	11
Alert Bay	Box 10, Alert Bay, V0N 1A0	974-5216	12
DISTRICT #6 - Victoria	116 - 816 Government St., Victoria, V8W 1W9	566-3252	
Victoria/Saanich	116 - 816 Government St., Victoria, V8W 1W9	566-3252	19
Sooke	Box 460, Sooke, V0S 1N0	642-5322	20
DISTRICT #7 - Kitimat	315 - 450 Federal Building, Kitimat, V8C 1T6	632-4884	
Butedale	315 - 450 Federal Building, Kitimat, V8C 1T6	632-4884	6
Bella Bella	Box 38, Bella Bella, V0T 1B0	957-2363	7
Bella Coola	Box 130, Bella Coola, V0T 1C0	799-5345	8
Rivers Inlet	Dawson Landing P.O., Rivers Inlet, V0N 1H0		9
Smith Inlet	Dawson Landing P.O., Rivers Inlet, V0N 1H0		10
DISTRICT #8 - Prince Rupert	109 - 417 2nd Ave. West, Prince Rupert, V8J 1G8	624-9137	
Waterfront	109 - 417 2nd Ave. West, Prince Rupert, V8J 1G8	624-9137	
Skeena	109 - 417 2nd Ave. West, Prince Rupert, V8J 1G8	624-9137	4A
Grenville - Principe	109 - 417 2nd Ave. West, Prince Rupert, V8J 1G8	624-9137	5
Lower Nass	109 - 417 2nd Ave. West, Prince Rupert, V8J 1G8	624-9137	3A
Upper Nass	Box 29, Nass Camp, V0J 3J0	633-2408	3B
Hazelton	Box 327, Field Street, Hazelton, V0J 1Y0	842-6327	4C
Smithers	Box 578, Smithers, V0J 2N0	847-2312	4D
Terrace	4721-B Lazelle Ave., Terrace, V8G 1R6	635-2206	4B
DISTRICT #9 - Queen Charlotte Is.	Box 99, Queen Charlotte City, V0T 1S0	559-4413	
West Coast Q.C.I.	Box 99, Queen Charlotte City, V0T 1S0	559-4413	2W
Masset	Box 99, Masset, V0T 1M0	626-3316	1
Sandspit	Box 222, Sandspit, V0T 1T0	637-5340	2E
DISTRICT #10 - Whitehorse	122 Industrial Road, Whitehorse, Y.T., Y1A 2T9	667-2235	
Yukon South/Northern B.C.	122 Industrial Road, Whitehorse, Y.T., Y1A 2T9	667-2235	120
Yukon-Arctic	122 Industrial Road, Whitehorse, Y.T., Y1A 2T9	667-2235	110
Alsek-Taku	Box 5341, Haines Junction, Y.T., Y0B 1L0	634-2235	130


SALMON SPAWNING STREAMS
STATISTICAL AREA 15
N
TOBA INLET
Homfray
East Redonda Island
Channel
DESOLATION SOUND
Pryce Channel
West Redonda Island
Cortes Island
Okeover Inlet
Powell Lake
Goat Island
Powell River
1. BREM RIVER
2. FILER CREEK (Filer River)
3. FORBES CREEK
4. (Forbes Bay Creek, Small Creek)
5. KILTE RIVER
6. LITTLE TOBA RIVER
7. (Okeover Creek, Okeover Arm Creek)
8. (Pendrell Sound Creek, Pendrell Creek)
9. (Refuge Cove Lagoon, Refuge Cove Lake)
10. (Salt Lagoon Creek, Black Lake Creek)
11. SLIAMMON CREEK (Sliammon River)
12. (Store Creek)
13. TAHUMMING RIVER
14. THEODOSIA RIVER (Twin Rivers, Farm Creek East Fork)
15. TOBA RIVER

SUMMARY

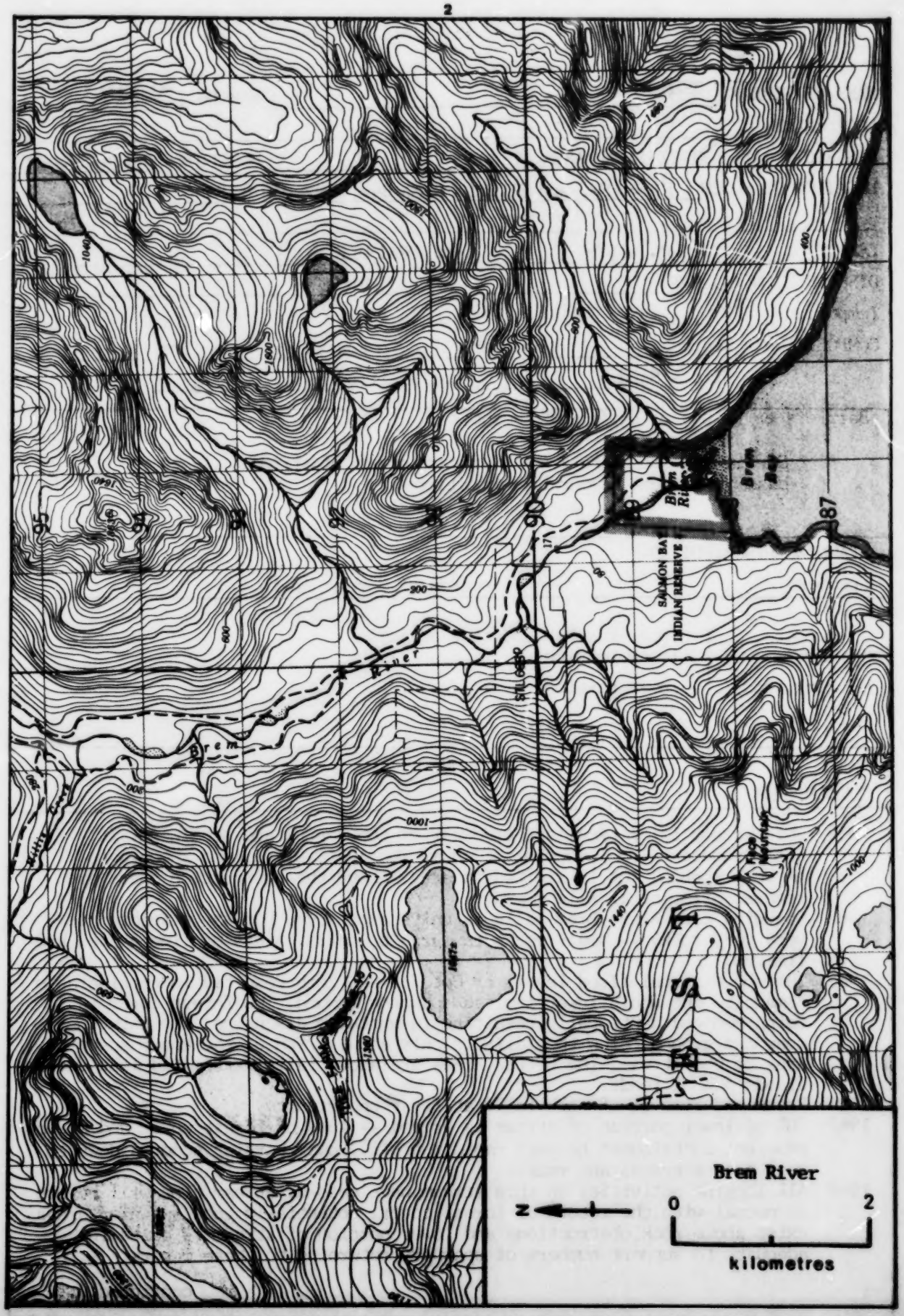
ESCAPEMENT RECORD FOR STATISTICAL AREA 15 - POWELL RIVER

YEAR	SOCKEYE	CHINOOK	COHO	CHUM	PINK	STEELHEAD
47			17300	53400	78650	
48		25	7275	21000	2100	750
49		1550	20550	104300	94100	600
50						
51		3900	19825	144300	95900	
52		1575	22000	147300	400	400
53		1900	18950	105700	124650	1500
54		3500	25700	93200	75	
55		4250	28625	25875	39625	3900
56		1900	48550	46850	350	1700
57		2300	44750	71050	107650	1700
58	25	3975	26250	53900	25	825
59		2925	19775	36000	51150	950
60		2100	24400	23600		950
61		975	6150	83825	48575	75
62		3400	14150	14625		75
63		8500	28975	15125	78475	275
64		8500	35050	22775		
65		7400	17050	18075	16000	
66		14500	35500	25300		950
67		13600	18275	19100	24040	
68		13000	30210	84050	12	
69		8100	22900	26470	13100	
70		25000	41040	12700	50	
71		19000	31760	26150	37150	
72		11700	33020	49750	40	500
73		9500	19600	14900	25500	
* 74			1050	28700		
* 75			725	16625	21300	
76			700	17765		
77		110	7908	28348	6235	
78			300	16348		
79		25	815	16096	4650	
80		5	556	18100	25	
81	6	10	210	28505	6076	
82		1552	684	18450		
83		1500	920	34056	350	
84		600	1245	19685		
85						

TIMING:						
Arrive						
Start						
Peak						
End						

REMARKS * Due to turbid water conditions in 1974/75, chinook and coho escapements were impossible to enumerate.

N
Brem River
0
10
kilometres
INLET
Orford
River
Howe Bay
Orford Bay
Littleton Pt.
TOBA
INLET
Pryce Channel
Double Pt.
Channel
Elizabeth I.
Snout Pt.
FOREST
Face Pt.
Attwood Bay
Homfray Creek


Brem River
N
0
2
kilometres

NAME OF STREAM BREM RIVER RAB NO. 90-3300

LOCAL NAME

DISTRICT 3 STATISTICAL AREA 15 POSITION 50 124 SW.

LOCATION OF MOUTH Flows SW. and SE.into Brem Bay, Toba Inlet Range 1.

LENGTH km WIDTH m DRAINAGE km^2

DISCHARGE (m^3/s) MAX MIN

Temperature (^oC)

COMPOSITION: Bedrock Boulder Coarse Fine

Silt & Sand Unclassified

Barriers or Points of Difficult Ascent:

Series of rock falls 2.4 - 13km from mouth of stream passable during favourable conditions.

SPAWNING DISTRIBUTION

Species	Section of Stream Used
coho	upper reaches and side streams
chum	lower portion
pink (odd)	lower portion

GENERAL REMARKS

1959 This stream is an excellent producer of coho, pink and steelhead. It also produces a small number of chum. The available ground appears to be very stable, but is limited in area. Above the obstruction there are several miles of excellent gravel

1962 Spawning area above Brem falls is quite extensive, but the streambed is very very rocky — small rocks to large boulders. Areas of fine gravel are limited.

1965 The above normal flood levels of Oct 7,8 and 20th resulted in considerable damage to the whole lower limited spawning ground. The forest cover is being removed continually resulting in unstable discharge. The existing spawning ground below the falls is only about 1/9th of the known spawning area of the stream. The better areas are above falls. Estimated loss due to floods 50% of redds.

1966 Recommend removal of rock falls at first opportunity.

1967 50% of lower portion of stream is eroded — loss of forest cover and steep gradient contributes to very rapid run off. Lower portion scoured down to very coarse gravel and rocks.

1968 All logging activities on this stream have ceased. Stream flow will revert to normal with the return of forest cover. Potentially good spawning areas exist above rock obstructions and lower portion of stream is quite inadequate to support numbers of spawners returning to these waters.

continued.....

BREM RIVER

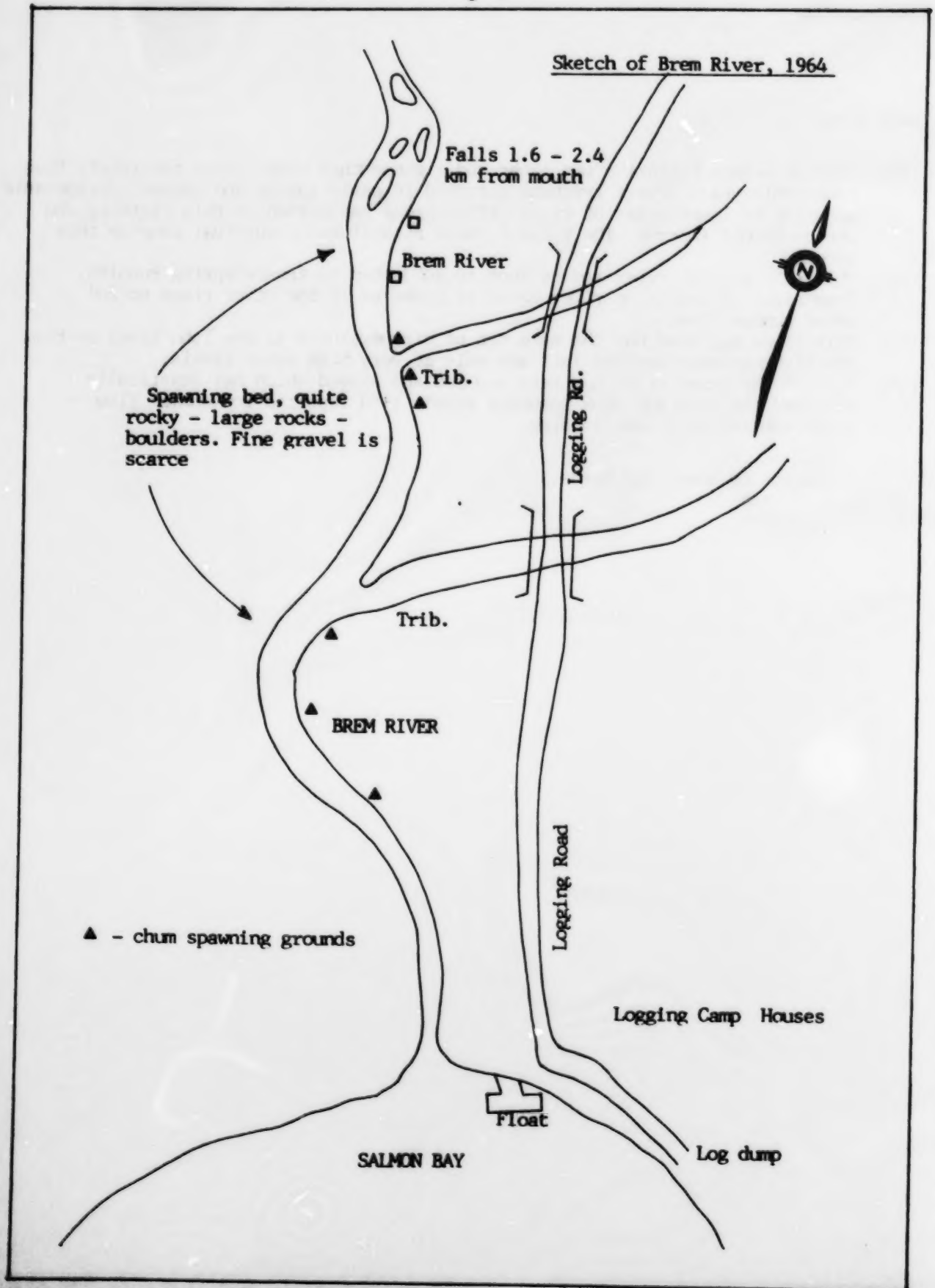
1969 Chinook salmon migration was later and lighter than usual, very few sports fish taken this year. Severe freshets occurred in early spring and caused considerable scouring in lower areas of river. All logging has ceased in this vicinity and stream should improve. The R.C.A.F. have established a survival camp on this stream.

1979 This is a glacial river and as such is subjected to severe spring runoffs. From signs of debris on river banks it looks as if the river rises to 20' above summer flow.

1981 This river may have had the same set of circumstances as the Toba River System. The fish may have arrived late and only at very high water levels.

1984 Most of the lower river has been scoured and eroded which has drastically affected the chum and pink spawning areas. 1983 reported low summer flow — river subject to flash flooding.

Predation by bears and birds.

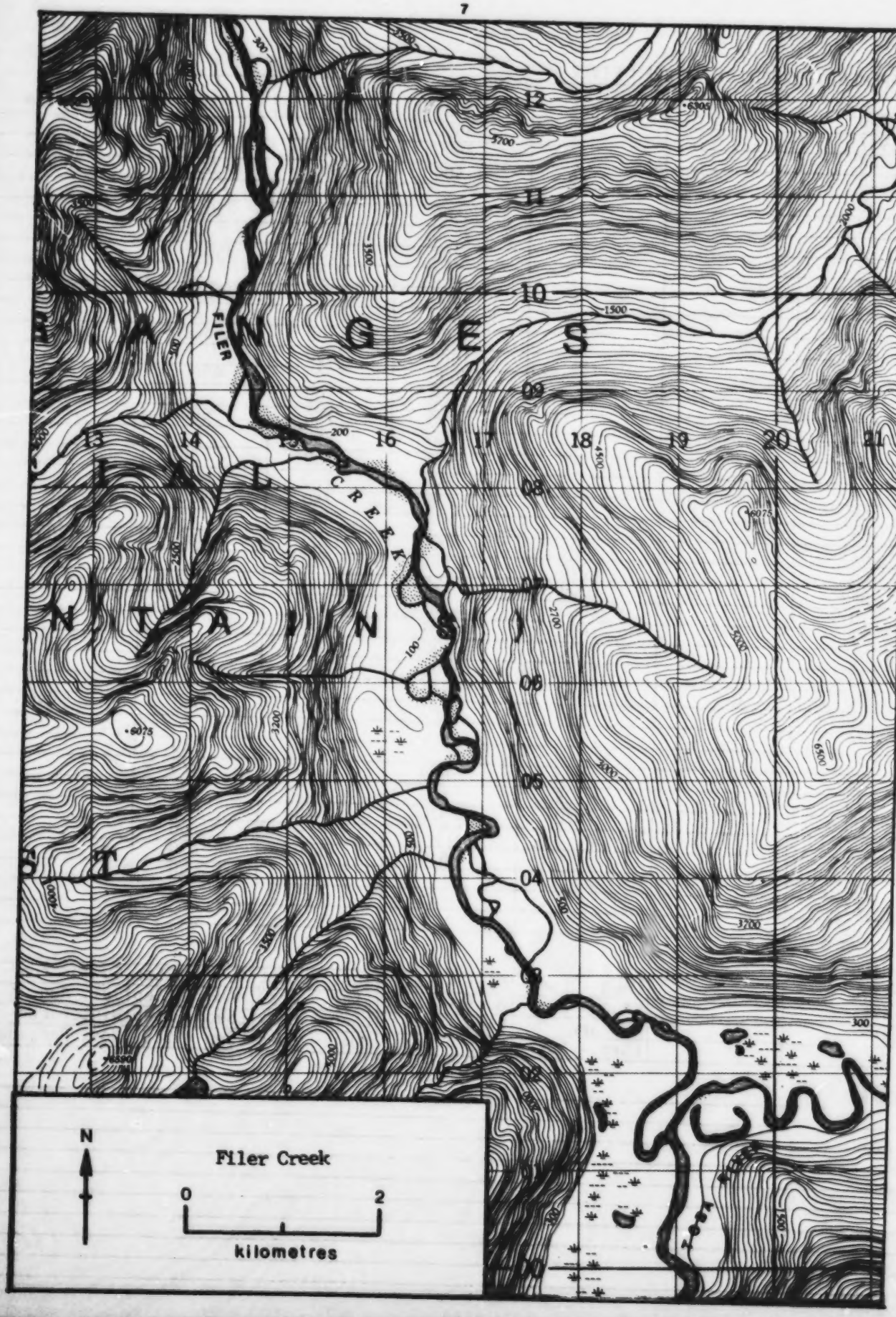

Sketch of Brem River, 1964
Falls 1.6 - 2.4 km from mouth
Brem River
Trib.
Spawning bed, quite rocky - large rocks - boulders. Fine gravel is scarce
Logging Rd.
N
Trib.
BREM RIVER
▲ - chum spawning grounds
Logging Road
Logging Camp Houses
Float
SALMON BAY
Log dump

ESCAPEMENT RECORD FOR BREM RIVER

YEAR	SOCKEYE	CHINOOK	COHO	CHUM	PINK	STEELHEAD
1947			3500	7500	7500	
48			3500	3500	1500	750
49		25	400	3500	35000	400
50			NO	RECORDS		
51			3500	7500	35000	
52			3500	7500	50	
53			3500	7500	35000	1500
54			3500	3500	75	
55			3500	1500	15000	3500
56			3500	1500	25	1500
57			1500	1500	15000	1500
58			1500	7500		750
59			2000	1200	4000	800
60			1500	1500		750
61			750	750	3500	
62			750	750		
63			1500	400	750	200
64			750	750		
65			400	750	3500	
66			750	400		750
67		500	50	1500	2000	UNK
68		1000	6000	5000		
69		1000	2000	3000	5000	
70		2000	10000	500	50	
71		1000	6000	4000	6000	
72		2000	8000	5000	N/0	500
73		1000	5000	1000	6000	
74		N/0	N/0	200	N/0	
75		N/0	N/0	1000	1000	UNK
76				400		
77				200	200	
78		N/0	N/0	100	N/0	
79		25	200	150	600	
80		N/0	N/0	N/0	N/0	
81				5	60	
82			N/0	N/0	N/0	
83				100	50	
84			25	25	-	
85						

TIMING:						
Arrive		LAug - ESep	MJul - ENov	Sept - EOct	Aug - ESep	Summer run
Start		LAug - ESep	MJul - LSept	ESep - Oct	MAug - LSep	Jul, Aug
Peak		M-L Sep	LAug - Nov	LSep - ENov	ESep - LSep	Winter run
End		LSep - Nov	LSep - Dec	MOct - EDec	LSep - Oct	Nov, Dec, Jan

REMARKS


RANGES
MAIN
FILER
CREEK
12
11
10
09
08
07
06
05
04
13
14
15
16
17
18
19
20
21
N
Filer Creek
0
2
kilometres

NAME OF STREAM FILER CREEK RAB NO. 90-3200-050

LOCAL NAME (Filer River)

DISTRICT 3 STATISTICAL AREA 15 POSITION 50 124 NE.

LOCATION OF MOUTH Flows S. into Toba River, Range 1, Coastal Dist.

LENGTH _____ km WIDTH _____ m DRAINAGE _____ km^2

DISCHARGE (m^3/s) MAX _____ MIN _____

Temperature (^oC) _____

COMPOSITION: Bedrock _____ Boulder _____ Coarse _____ Fine _____

Silt & Sand _____ Unclassified _____

Barriers or Points of Difficult Ascent:

No obstruction to head of the river

SPAWNING DISTRIBUTION

Species	Section of Stream Used
	UNKNOWN

GENERAL REMARKS

1975 This is the first year a separate stream report has been made for the Filer Creek. As it is the major water source for the Toba,it has been included with the Toba report in the past. With the addition of a jet river boat this season we were able to inspect the lower reaches of this river by foot during the chum migration. This is a beautiful looking glacial river. No rearing coho could be found and only a few chum. The few chum are reflected in an almost nil return to the entire Toba system. The heavy flooding this year will have caused major damage to any spawn as with the rest of the Toba system.

Physical conditions: 1975 Extreme flooding in early November. Major scouring of spawning beds. Water levels extremely high during early November flooding. Some predation by bears.

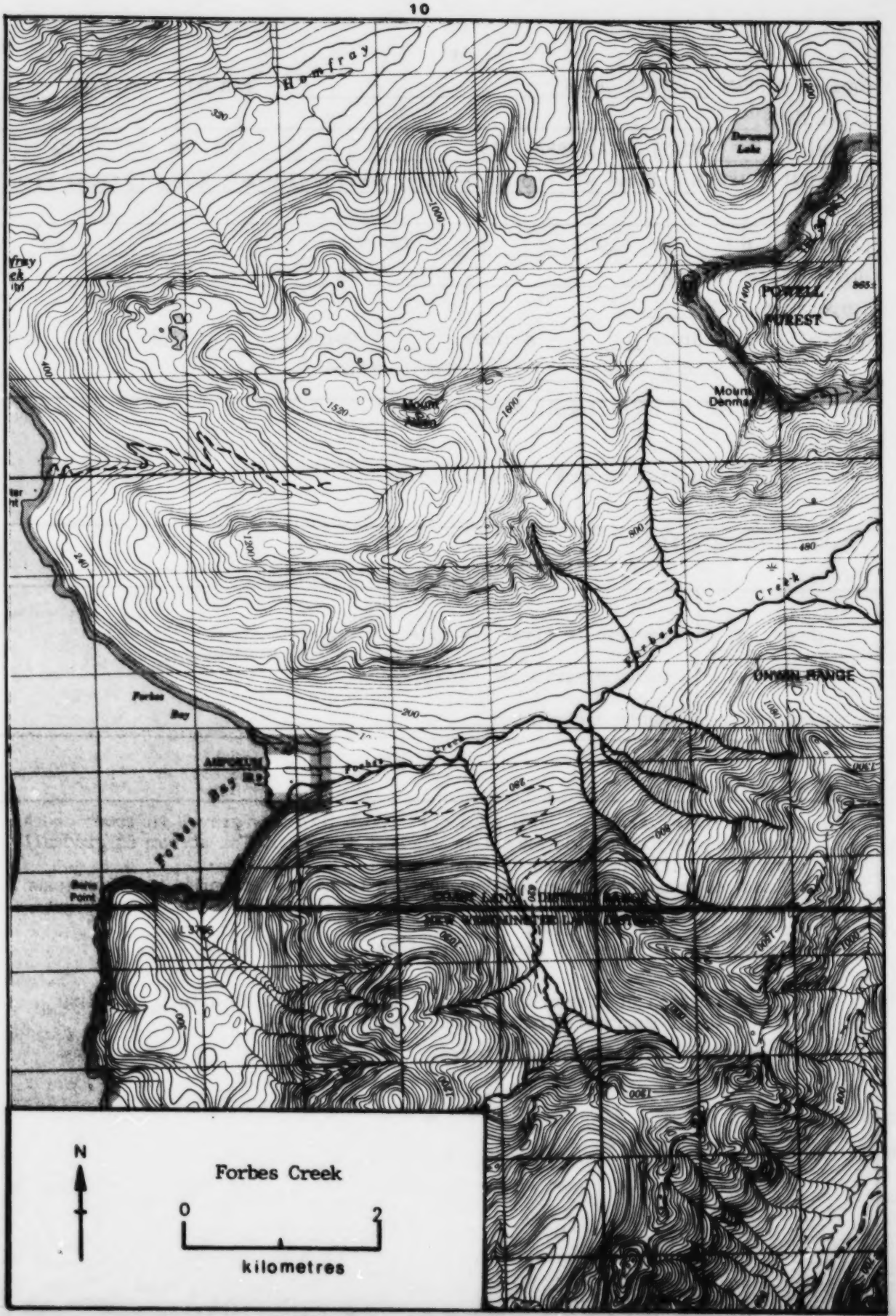
ESCAPEMENT RECORD FOR FILER CREEK

YEAR	SOCKEYE	CHINOOK	COHO	CHUM	PINK	STEELHEAD
1947						
48						
49						
50						
51						
52						
53						
54						
55						
56						
57						
58						
59						
60						
61						
62						
63						
64						
65						
66						
67						
68						
69						
70						
71						
72						
73						
74						
75		N.O.	N.O.	few	N.O.	
76						
77						
78						
79						
80						
81						
82						
83						
84		NOT INSPECTED SINCE 1975				
85						

TIMING:

Arrive						
Start						
Peak						
End						

REMARKS


Hamfray
POWELL FOREST
Mount Denman
Creek
Forbes Bay
Forbes Bay Rd
Forbes
Point
ONSLOW RANGE
N
Forbes Creek
0
2
kilometres

NAME OF STREAM FORBES CREEK RAB NO. 90-3080

LOCAL NAME

DISTRICT 3 STATISTICAL AREA 15 POSITION 50 124 SW

LOCATION OF MOUTH Flows W. into Forbes Bay, Homfray Channel, Range 1, Coast Dist.

LENGTH 1.6 km WIDTH m DRAINAGE km^2

DISCHARGE (m^3/s) MAX MIN

Temperature (^oC)

COMPOSITION: Bedrock Boulder Coarse Fine

Silt & Sand Unclassified

Barriers or Points of Difficult Ascent:

Impassable rock falls at 1.6 km

SPAWNING DISTRIBUTION

Species	Section of Stream Used
chum	heaviest in first 1/4 mile
pink	evenly distributed throughout
coho	evenly distributed.

GENERAL REMARKS

1974 A small chum stream — good producer, rough bouldery gravel in lower creek. Many deep pools provide excellent shelter for coho. The stream is gradually improving with the return of forest cover.

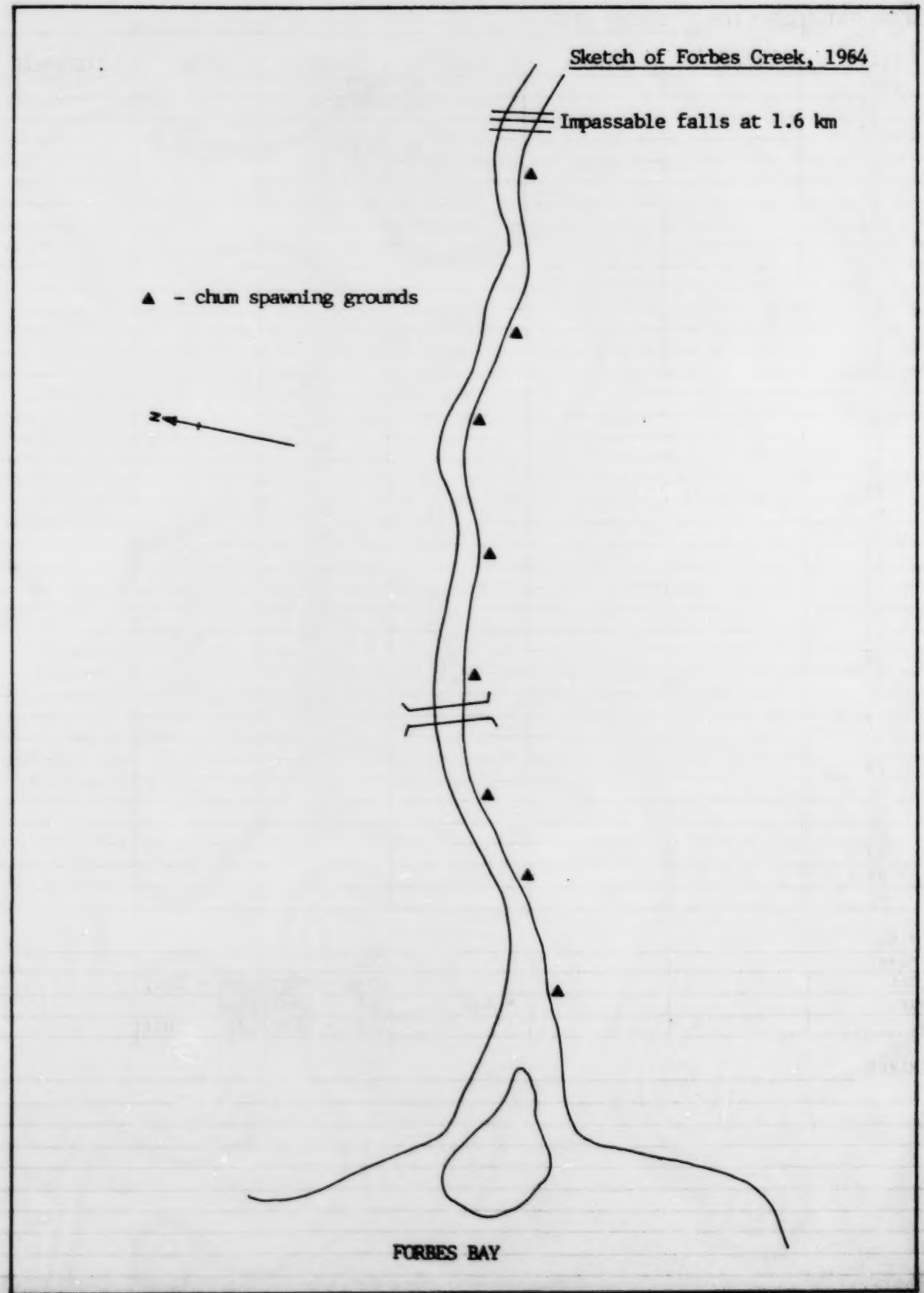
1975 Flooding in early Nov. may have caused a total loss to pink and chum spawn.

1978 This stream is fast and turbulent making it difficult to make an accurate count past first 1/4 mile.

1981 This creek could easily handle more fish.

Lower portion of stream is eroded — does not seem to affect spawning fish. Usual seasonal fluctuations in water levels.

Predation: seals. birds and bears.


Sketch of Forbes Creek, 1964
Impassable falls at 1.6 km
▲ - chum spawning grounds
N
FORBES BAY

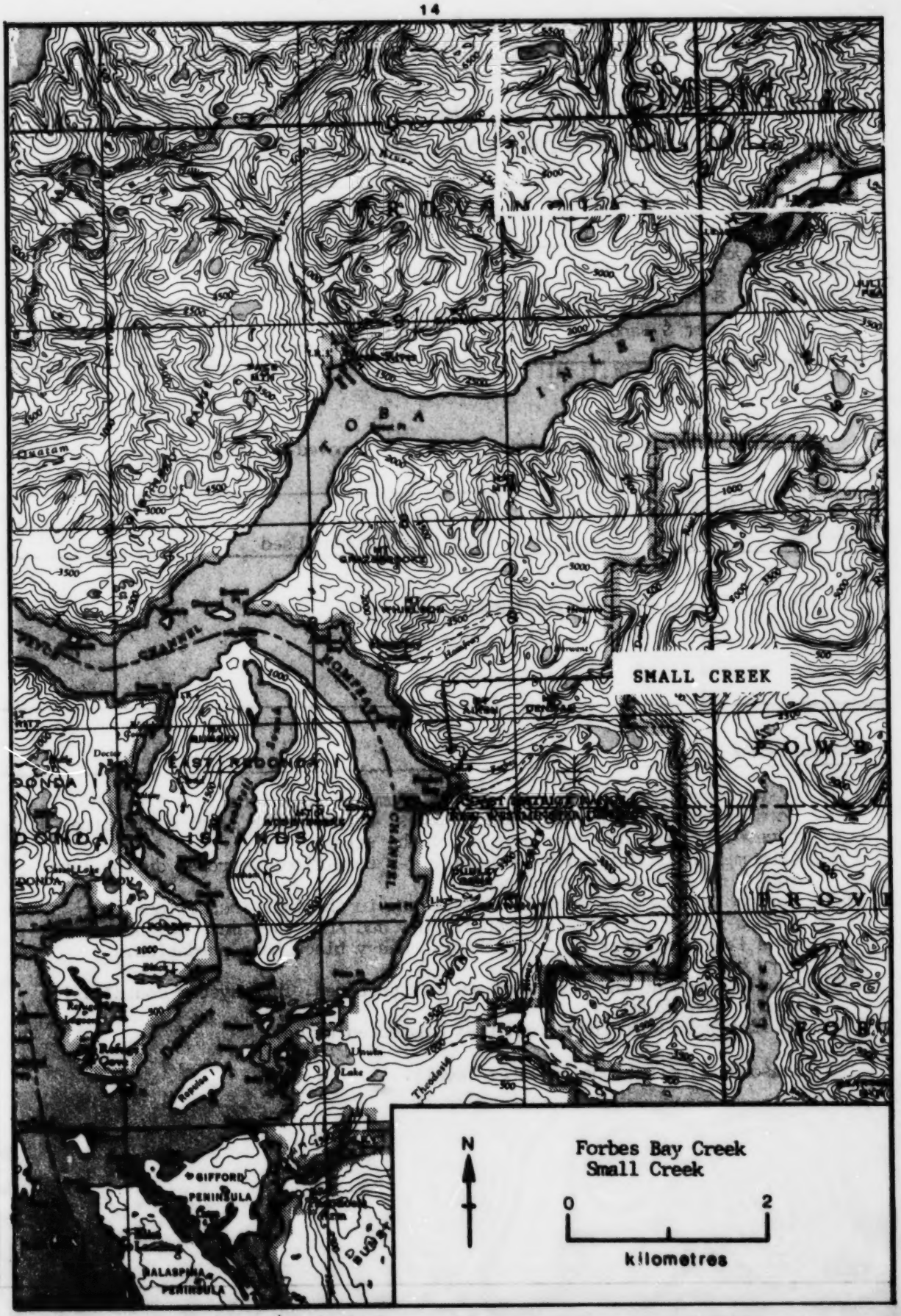
ESCAPEMENT RECORD FOR FORBES CREEK

YEAR	SOCKEYE	CHINOOK	COHO	CHUM	PINK	STEELHEAD
1947			NO	RECORDS		
48			NO	RECORDS		
49			25	1500	400	
50			NO	RECORDS		
51				15000	3500	
52				7500	75	
53				3500	3500	
54				7500		
55				3500	400	
56				1500	75	
57				3500	200	
58				3500		
59				1000	50	
60				750		
61				400	25	
62				400		
63				750	75	
64				400		
65				200		
66				750		
67			N/O	500	N/O	
68				600	N/O	
69				500	100	
70				500		
71			40	400	N/O	
72			N/O	1000		
73			N/O	100	N/O	
74			N/O	4000	N/O	
75			N/O	300	300	
76				1500		
77				120		
78				300		
79				366		
80				600		
81				700		
82				NOT INSPECTED		
83				500		
84				50		
85						

TIMING:

Arrive				Oct	
Start				LSep - MOct	LAug - LSep
Peak			M Nov	Oct - LNov	LSep
End				Oct - LDec	Sep - LOct

REMARKS


SMALL CREEK
N
Forbes Bay Creek
Small Creek
0
2
kilometres

NAME OF STREAM (Forbes Bay Creek,Small Creek) RAB NO. 90-3087

LOCAL NAME

DISTRICT 3 STATISTICAL AREA 15 POSITION 50 124 SW

LOCATION OF MOUTH Flows into Forbes Bay - Homfray Channel (North of Forbes Creek)

LENGTH .30 km WIDTH m DRAINAGE km^2

DISCHARGE (m^3/s) MAX MIN

Temperature (^oC)

COMPOSITION: Bedrock Boulder Coarse Fine

Silt & Sand Unclassified

Barriers or Points of Difficult Ascent:

Log jams and logging debris — removed by staff.

SPAWNING DISTRIBUTION

Species	Section of Stream Used
chum	- evenly distributed throughout

GENERAL REMARKS

1971 A short creek which supports mainly chum and occasionally a few coho. Good gravel areas in the lower reaches. Unfavourable logging practices have destroyed the upper portion of the stream.

1972 Chum migration delayed by low water — conditions improved during late run. Some improvement work needed.

1976 No coho adults were seen in this stream in the fall inspections, but a good number of fry were seen in Jul. and Aug. They must be the result of a late run entering in December. Heavy black bear predation.

1979 Very heavy bear predation.

1981 Good escapement and fish were well distributed. This system could easily handle more fish.

1983 No fish seen when inspected. Only inspected twice.

Seasonal fluctuations in water levels.

ESCAPEMENT RECORD FOR (Forbes Bay Creek, Small Creek)

YEAR	SOCKEYE	CHINOOK	COHO	CHUM	PINK	STEELHEAD
1947			400	3500		
48			750	3500	200	
49				750		
50			NO	RECORDS		
51			NO	RECORDS		
52			NO	RECORDS		
53			NO	RECORDS		
54				400		
55				400		
56				400		
57				750		
58				750		
59			50	600		
60				200		
61				75		
62				75		
63				200		
64				200		
65				200		
66				400		
67				150		
68				250		
69			N/O	220		
70			N/O	200		
71			N/O	400		
72				300		
73			N/O	100		
74			NO	RECORDS		
75			N/O	300		
76				750		
77				100		
78				430		
79				852		
80				800		
81				700 +		
82				N/O		
83				N/O		
84				140		
85						

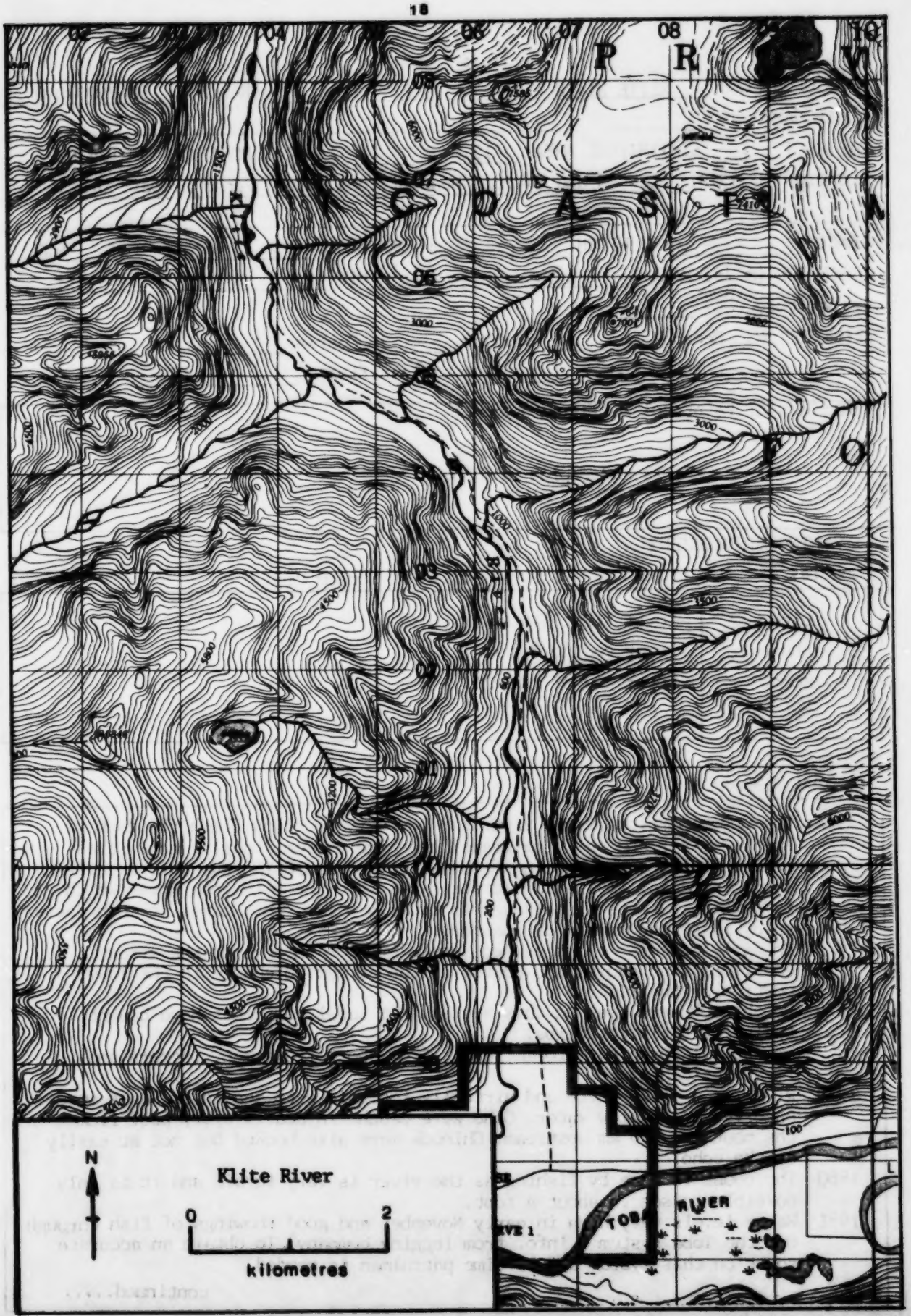
TIMING:

Arrive						
Start						
Peak						
End						

REMARKS

- 1974 - low water, no fish entered the stream.

MT. GILBERT
FALCON MTN
TAVISTOCK MTN
MT. SILER
TAPHUMMING MTN
MT. CARROLL
TOBA
PROVINCIAL PARK
Toba Inlet
N
Klite River
0
10
kilometres


N
Klite River
0
2
kilometres

NAME OF STREAM KLITE RIVER RAB NO. 90-3100-010

LOCAL NAME

DISTRICT 3 STATISTICAL AREA 15 POSITION 50 124 NE

LOCATION OF MOUTH Flows S and SW into head of Toba Inlet, Range 1 Coast Dist.

LENGTH 22 km WIDTH _____ m DRAINAGE _____ km^2

DISCHARGE (m^3/s) MAX _____ MIN _____

Temperature (^oC) _____

COMPOSITION: Bedrock _____ Boulder _____ Coarse _____ Fine _____

Silt & Sand _____ Unclassified _____

Barriers or Points of Difficult Ascent:

Falls and rapids at 10 km

SPAWNING DISTRIBUTION

Species	Section of Stream Used
pink	- over first 1.6 km
chum	-lower end to 3.2 km
coho	-upper end of river
chinook	" " "

GENERAL REMARKS

1968 The upper portion of the river has bouldery sections. Flash floods have scoured river and shifting gravel beds are common. Logging activities ceased in 1968. The return of forest cover should improve this excellent salmon producer (1971) This creek flows into the main Toba River which is turbid, but the Klite River is usually clear. This makes it much easier to estimate the number of spawners.

1975 An early November flood caused severe erosion throughout the stream. The flood also caused the course of the stream to change in the lower portion of the river.

1976 No chinook were seen in this system, but local residents have caught twelve (from 15 to 20 lbs)

1977 Almost all spawning information is from sport fishermen, loggers and local residents.

1979 River is a milky white and virtually impossible to see into. Pinks were observed in shallow water. Coho were caught in nearly every pool from the mouth to 9.6 km upstream. Chinook were also hooked but not at easily as the coho.

1980 The count is done by fishing as the river is very turbid and it is only possible to see in about a foot.

1981 Water levels very high in early November and good showings of fish throughout the Toba system (info. from logging company). To obtain an accurate count on this system a full time patrolman is needed.

continued.....

continuation

KLITE RIVER

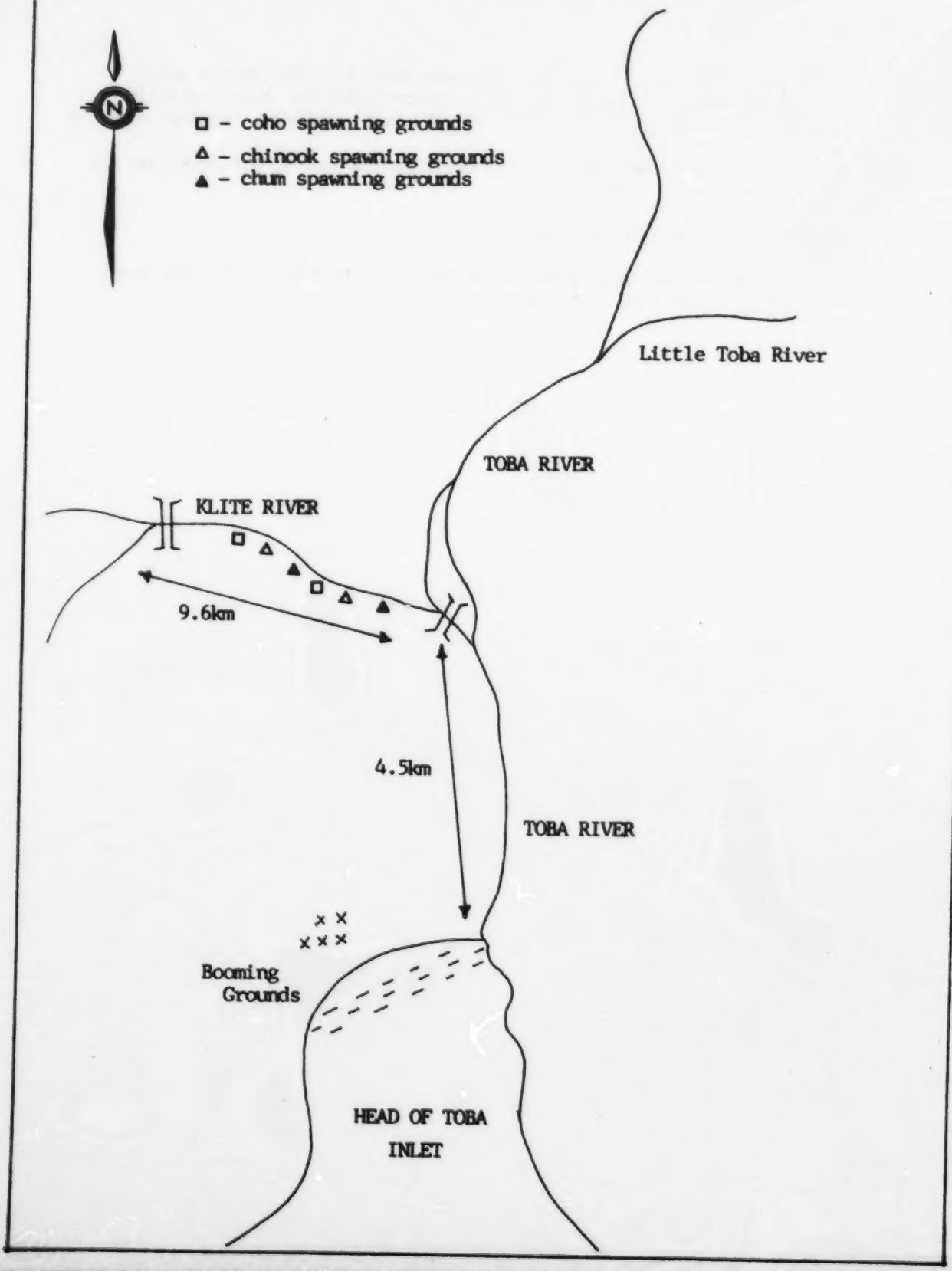
1983 The lower reaches of the river are very unstable and change after every high water. A large log jam is forming at the junction with the main Toba River.Heavy scouring and gravel movement on pink spawning grounds.

1984 More changes in lower end — log jam at mouth washed out.Scouring and channelization at lower end.

Seasonal fluctuations in water levels.

Bear predation has been reported as being quite heavy over the years, also subject the eagle and merganzer predation.

Sketch of Klite River, 1968



ESCAPEMENT RECORD FOR KLITE RIVER

YEAR	SOCKEYE	CHINOOK	COHO	CHUM	PINK	STEELHEAD
1947			3500	7500	35000	
48		25	1500	3500	400	
49		25	400	1500	15000	
50			NO	RECORDS		
51		400	3500	15000	15000	
52		75	1500	1500	75	
53		400	3500	3500	35000	
54			3500	3500		
55		750	3500	750	7500	
56		400	3500	3500		
57		400	1500	3500	15000	
58		75	750	1500		
59		400	500	500	12000	
60		200	1500	1500		
61		25	400	1500	15000	
62		1500	3500	750		
63		3500	3500	400	7500	
64		3500	7500	1500		
65		3500	3500	3500	7500	
66		7500	7500	3500		
67		1000	2500	2000	5000	
68		2000	3000	10000		
69		1000	4000	500	1000	
70		3000	6000	1000	N/0	
71		2000	4000	3000	12000	
72		1200	3000	1800	N/0	
73		1000	4000	1500	8000	
74		N/0	N/0	UNK	N/0	
75		N/0	N/0	2000	8000	UNK
76		-	-	750	-	
77		50 +	-	800		
78		N/0	N/0	N/0		
79			UNK		1000 +	
80			50		25	
81		10	10	1000	5000	
82		500	200	350		
83		400	-	100	200	
84		100	500	600		
85						

TIMING:

Arrive		Jun - LAug	Aug - ESep	L Aug	-	Fall & spring
Start		LJun - Jul	EAug - ESep	Aug - LOct	MJul - MAug	runs
Peak		MJul - EAug	LAug - ESep	ESep - MNov	Sep	
End		MAug - Sep	MSep - EDec	MNov - EDec	MSep - Oct	

REMARKS

Bishop Glacier
Glacier
Toba Glacier
Toba River
Toba Inlet
Little Toba River
0
10
kilometres

NAME OF STREAM LITTLE TOBA RIVER RAB NO. 90-3200-030

LOCAL NAME

DISTRICT 3 STATISTICAL AREA 15 POSITION 50 124 NE.

LOCATION OF MOUTH Flows NW into Toba River, Range 1, Coast Dist.

LENGTH 13 km WIDTH m DRAINAGE km^2

DISCHARGE (m^3/s) MAX MIN

Temperature (^oC)

COMPOSITION: Bedrock Boulder Coarse Fine

Silt & Sand Unclassified

Barriers or Points of Difficult Ascent:

-Passable series of rocky gradients from 6 - 12 km

SPAWNING DISTRIBUTION

Species	Section of Stream Used
chum	- in first 1.6 km
coho	- 8 - 11 km
chinook	- 8 - 11 km
pink	- in first 1.6 km

GENERAL REMARKS

1964 This stream is turbid making estimates of spawners very difficult. Erosion moderate — some silting.

1966 This stream is glacial fed — abnormal rainfall during late fall and winter did not affect this stream.

1967 An excellent salmon producing stream — good stretches of fine spawning gravel. 1968 Excellent water levels during most of season — freshets Nov.

1969 No logging activities have taken place on this river for the last number of years. Consistent producer, but should improve with return of forest cover.

1970 Lower portion of river flooded — partial log jams backed water up during the snow melt off. 1972 No logging activities — conditions improving.

1974 Commercial trolling and a little gillnetting indicated a very poor return.

1975 Extreme erosion and silting from major flooding in early November — major scouring in lower river. Upper reaches of the system will be logged in the near future. A fair return of pinks was realized due to the strike in the commercial salmon industry.

1977 Fish counts are from a local resident who lives year round on the Toba River. 1979 Sport fishing indicates fish are present in fairly good numbers.

continued.....

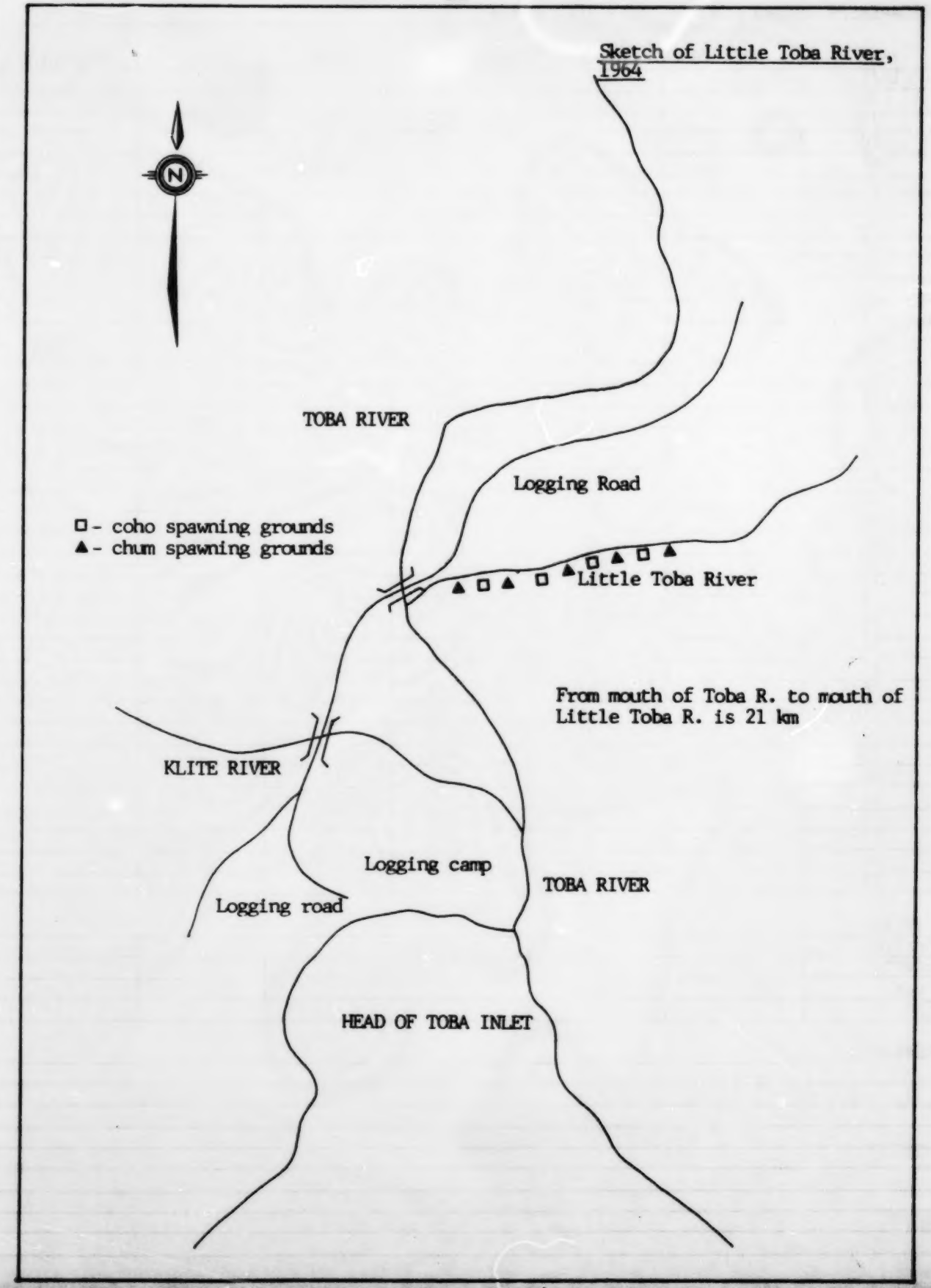
continuation

LITTLE TOBA RIVER

1980 Little Toba River has several small feeder streams which seem to be good coho habitat. Coho can be caught from mouth to 13 km in good numbers during September. Water levels very high in late Dec.

1981 The large tributary at 8 mile bridge may be the best coho habitat in this system. As with the other rivers in the Toba system, the Little Toba returns were probably affected by the very low water in mid October and the very high water in late October. Fish may have returned only at very high water.

1984 Lower end of river changing and unstable — scouring, channelization and debris build up at 1.6 km.High water levels in October.


Sketch of Little Toba River, 1964
N
TOBA RIVER
Logging Road
□ - coho spawning grounds
▲ - chum spawning grounds
Little Toba River
From mouth of Toba R. to mouth of Little Toba R. is 21 km
KLITE RIVER
Logging camp
TOBA RIVER
Logging road
HEAD OF TOBA INLET

ESCAPEMENT RECORD FOR LITTLE TOBA RIVER

YEAR	SOCKEYE	CHINOOK	COHO	CHUM	PINK	STEELHEAD
1947						
48						
49			400	1500	7500	
50						
51			750	3500	3500	
52						
53					15000	
54						
55			750	750	1500	
56			1500	1500		
57		400	1500	1500	1500	
58		400	750	1500		
59		500	1000	500	15000	
60		400	3500	750		UNK
61		200	750	750	15000	
62		400	1500	3500		
63		1500	7500	400	35000	
64		1500	7500	750		
65		400	1500	75	1500	
66		3500	7500	750		
67		2000	4000	3000	7000	
68		2000	4000	15000		
69		2000	3000	1000	2000	
70		8000	10000	1500		
71		6000	8000	3000	13000	
72		2500	6000	6000	N/0	
73		1500	4000	1000	3000	
74		N/0	N/0	N/0	N/0	
75		N/0	N/0	2000	4000	
76		N/0	N/0	1500	N/0	
77		60 +	3000		6000	
78		N/0	N/0	N/0	N/0	
79		UNK	UNK	UNK	3000	
80		5	UNK	1500	-	
81		-	-	2000	1000	
82		500	300	500		
83		500	400	-	100	
84		200	100	N/0	-	
85						

TIMING:

Arrive						
Start						
Peak						
End						

REMARKS

TOBA
PROVINCIAL
FOREST
MALASPINA
PENINSULA
Okeover Creek
N
0
2
kilometres

NAME OF STREAM (Okeover Creek, Okeover Arm Creek) RAB NO. 90-2950

LOCAL NAME

DISTRICT 3 STATISTICAL AREA 15 POSITION 49 124 NW.

LOCATION OF MOUTH E end of Malaspina Peninsula, New Westminster Dist.

LENGTH km WIDTH m DRAINAGE km^2

DISCHARGE (m^3/s) MAX MIN

Temperature (^oC)

COMPOSITION: Bedrock Boulder Coarse Fine

Silt & Sand Unclassified

Barriers or Points of Difficult Ascent:

Rock falls at 1.6 km impassable to chum

SPAWNING DISTRIBUTION

Species	Section of Stream Used
chum	- evenly from mouth to 1.2 km upstream
coho	- upstream as far as falls

GENERAL REMARKS

1966 Good chum producing stream — good gravel from mouth all the way upstream. Indian Food Fishery at mouth.

1967 Escapement was quite light this year, many partial log jams help to contain this stream — banks are very low and forest debris collects quite easily.

1969 This stream is gradually improving. There have been no logging activities for the past ten years. Partial log jams held to contain and stabilize this stream. Coho spawn at mouth of creek in the salt water.

1971 This stream is heavily poached. Black bears were very destructive (67,72)

1974 This stream supports an annual food fishery. It is easily accessible by road and is subject to poaching for chum eggs.

1976 The stream was cleared by the Enhancement Crew and is in excellent condition throughout the spawning area.

1977 Rock and log jams impassable to chum. Coho spawn above. Very heavy bear predation.

1978 This stream is in excellent condition from mouth to end of chum spawning area.

1980 The log jam was made passable to chum this year.

1981 This system is very encouraging. Adult coho were not observed, but the spring time usually seems like the best time to assess coho production.

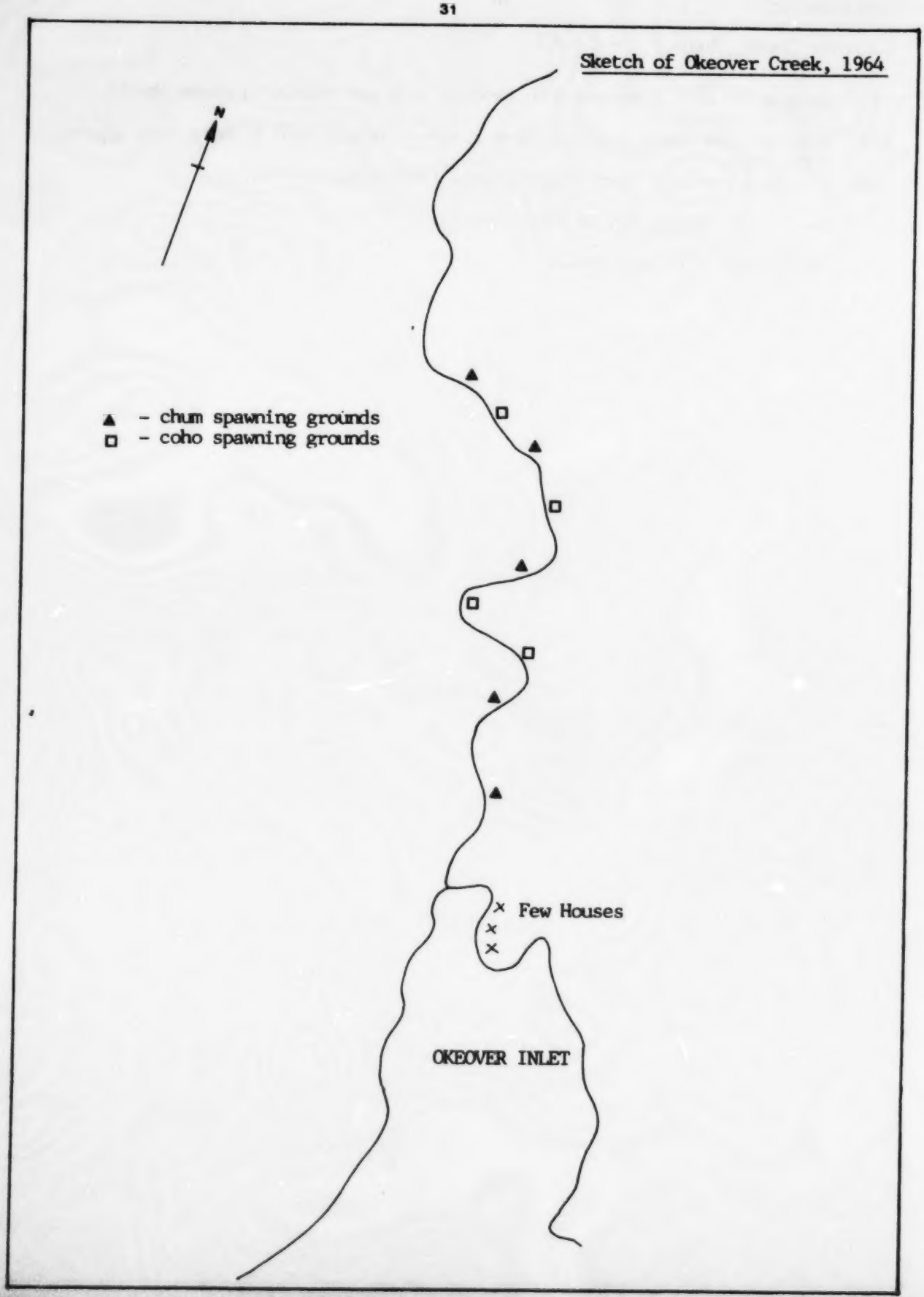
continued.....

(Okeover Creek, Okeover Arm Creek)

1982 Debris jam at 1.6 km sould be removed — loose debris in creek should also be removed
1983 Removed some minor log jams from river — Indian Food Rishery took approx. 2000 chum.
1984 Log jams removed. Chum spawning area increased.

Seasonal fluctuations in water levels.

Predators: bears and otters.


Sketch of Okeover Creek, 1964
N
▲ - chum spawning grounds
□ - coho spawning grounds
Few Houses
OKEOVER INLET

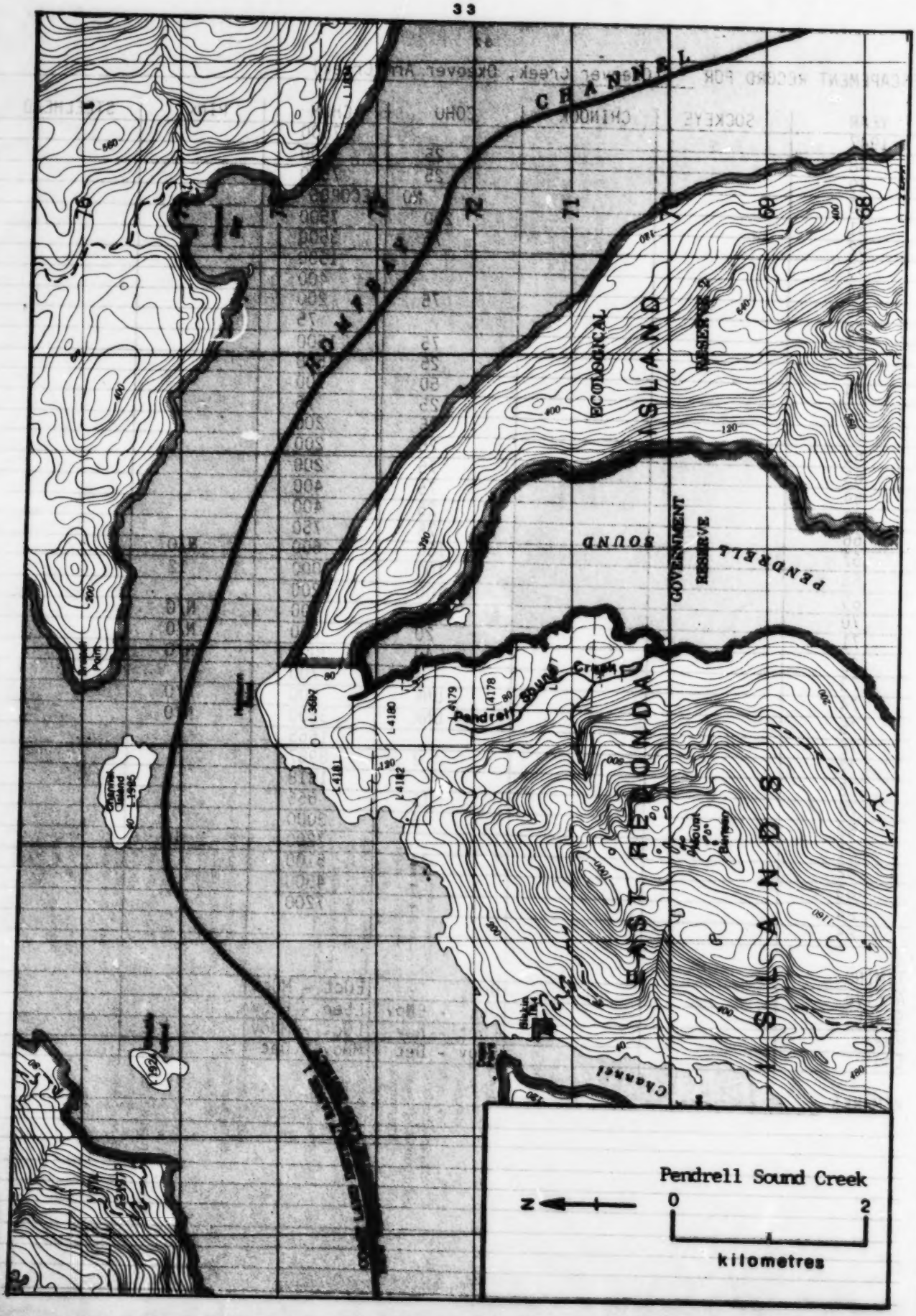
ESCAPEMENT RECORD FOR (Okeover Creek, Okeover Arm Creek)

YEAR	SOCKEYE	CHINOOK	COHO	CHUM	PINK	STEELHEAD
1947				7500		
48			25	3500		
49			25	7500		
50			NO	RECORDS		
51			200	7500		
52			75	3500		
53				1500		
54				400		
55			75	200		
56				75		
57			75	1500		
58			25	1500		
59			50	700		
60			25	75		
61			25	200		
62			25	200		
63			75	200		
64			75	400		
65			25	400		
66			75	750		
67			150	600	N/O	
68			100	3000	12	
69			100	2200		
70			40	400	N/O	
71			20	200	N/O	
72			40	3000	N/O	
73			-	700		
74			UNK	500	N/O	
75			UNK	3500	N/O	
76				1665		
77			2	8987		
78				1818		
79			15	665		
80			6	3000		
81				7200	10	
82			24	5100		
83			-	4500		
84			-	7200		
85						

TIMING:

Arrive			Oct	EOct - MOct		
Start			Oct - ENov	LSep - ENov		
Peak			LOct - Nov	LOct - MNov		
End			ENov - Dec	MNov - Dec		

REMARKS


CHANNEL
ECOLOGICAL RESERVE
GOVERNMENT RESERVE
PENDRELL SOUND
Pendrell Sound Creek
Channel
kilometres
0
2

NAME OF STREAM (Pendrell Sound Creek, Pendrell Creek) RAB NO. 90-3100-310

LOCAL NAME

DISTRICT 3 STATISTICAL AREA 15 POSITION 50 124 SW.

LOCATION OF MOUTH E. Redonda Island, New Westminster Dist.

LENGTH km WIDTH m DRAINAGE km^2

DISCHARGE (m^3/s) MAX MIN

Temperature (^oC)

COMPOSITION: Bedrock Boulder Coarse Fine

Silt & Sand Unclassified

Barriers or Points of Difficult Ascent:

Beaver dam .80 km from mouth makes a good reservoir — series of rock obstructions .80 upstream

SPAWNING DISTRIBUTION

Species	Section of Stream Used
coho	- throughout, in deep pools
chum	- scattered throughout lower portion of stream

GENERAL REMARKS

1967 This is a small stream originating in a small swamp and flowing into a tidal lagoon in Upper Pendrell Sound — limited spawning areas.
1969 This stream is improving through the return of forest cover.
1972 Escapements were lighter than usual — warm water temperatures delayed migration.
1978 Stream is only accessible during periods of high water — lagoon at mouth dries up completely at low tides.
1979 Bears tend to wipe out the fish in this creek. 1980 Heavy bear predation.
1981 Recommend that this creek be walked in the early spring or early summer to check for coho fry.

Seasonal fluctuations in water levels.

ESCAPEMENT RECORD FOR (Pendrell Sound Creek)

YEAR	SOCKEYE	CHINOOK	COHO	CHUM	PINK	STEELHEAD
1947			NO	RECORDS		
48			NO	RECORDS		
49				750		
50			NO	RECORDS		
51			NO	RECORDS		
52			25	400		
53				400		
54				400		
55				25		
56				200		
57			75	750		
58			25	25		
59			75	300		
60			75	200		
61			25	75		
62			25	200		
63			25	200		
64			25	200		
65				400		
66				200		
67			25	200	40	
68			150	600		
69			200	500		
70			100	100		
71			100	50	N/O	
72			80	50		
73			50	50		
74			UNK	UNK		
75			25	50		
76			NO RECORD			
77			NO RECORD			
78			N/O	600		
79			N/O	156		
80				200		
81				400		
82			NOT	INSPECTED		
83				356		
84				550		
85						

TIMING:

Arrive			Sep	Sep - Nov		
Start			MSep - Nov	Sep - Nov		
Peak			LSep - Dec	LSep - Nov		
End			MOct - Dec	MOct - Dec		

REMARKS

Refuge Lagoon
N
0
2
kilometres
CHANNEL
TSAWWASSEN
Roberts Lagoon
Mud Lake
Mud Bay
Boundary Bay
Crescent Beach
Semiahmoo Bay
Mud Bay
Mud Lake
Roberts Lagoon
Boundary Bay
Crescent Beach
Semiahmoo Bay

NAME OF STREAM (Refuge Cove Lagoon, Refuge Cove Lake) RAB NO. 90-3100-580

LOCAL NAME

DISTRICT 3 STATISTICAL AREA 15 POSITION 50 124 SW.

LOCATION OF MOUTH SW end of West Redonda Island, New Westminster Dist.

LENGTH 5 km WIDTH m DRAINAGE km^2

DISCHARGE (m^3/s) MAX MIN

Temperature (^oC)

COMPOSITION: Bedrock Boulder Coarse Fine

Silt & Sand Unclassified

Barriers or Points of Difficult Ascent:

Passable log sluiceway at 300 yds.

SPAWNING DISTRIBUTION

Species	Section of Stream Used
coho	- in feeder streams at head of lake

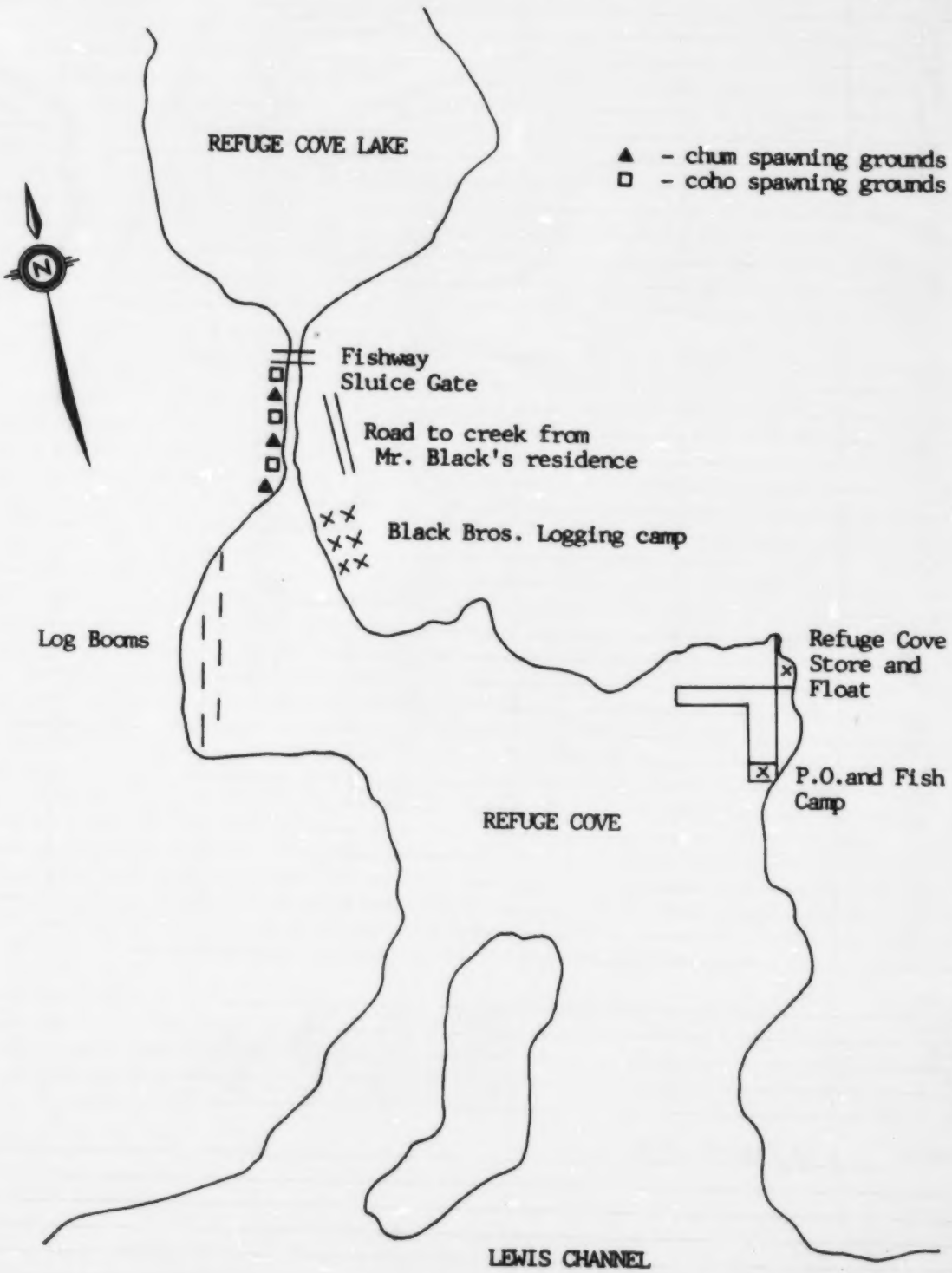
GENERAL REMARKS

1974 This was a salt lagoon at one time and is now fresh water due to a small dam (log sluiceway) at the outfall from the lagoon. Local resident maintains the area during salmon migration and opens the sluiceway dam when coho school below.

1975 Recommend that a permanent concrete dam be constructed with a fish way for coho enhancement. Spawning area is limited in the lagoon but rearing area is tremendous if the lake is maintained.

1978 Coho were observed at mouth of lagoon, but none were seen entering under the gate.
Water levels low to normal.

Sketch of Refuge Cove Lake, 1964



ESCAPEMENT RECORD FOR (Refuge Cove Lagoon, Refuge Cove Lake)

YEAR	SOCKEYE	CHINOOK	COHO	CHUM	PINK	STEELHEAD
1947			750	1500		
48			NO	RECORDS		
49			400	1500		
50			NO	RECORDS		
51			75	400		
52			750	750		
53				400		
54			NOT	INSPECTED		
55			400	25		
56			400	200		
57			400	75		
58	25		200	25		
59			100	50		
60			750	75		
61			200	25		
62			200	200		
63			200	25		
64			200	25		
65			200	25		
66			400	25		
67			300	200		
68			600	100		
69			300	200		
70			500	100		
71			300	N/0		
72			200	N/0		
73			200	N/0		
74			150	N/0		
75			80	N/0		
76			200			
77			300			
78			N/0			
79			N/0	N/0		
80						
81						
82						
83						
84						
85						

TIMING:

Arrive			EOct - Nov	Sep		
Start			MSep - Nov	LSep - LNov		
Peak			LOct - Dec	Oct - Nov		
End			Nov - EDec	LOct - Dec		

REMARKS Last Report 1979

ADDINGTON
Salt Lagoon Creek
Black Lake Creek
N
0
2
kilometres

NAME OF STREAM (Salt Lagoon Creek, Black Lake Creek) RAB NO. 90-3100-510

LOCAL NAME

DISTRICT 3 STATISTICAL AREA 16 POSITION 50 124 SW.

LOCATION OF MOUTH W. Redonda Island, near S. end, New Westminster Dist.

LENGTH _____ km WIDTH _____ m DRAINAGE _____ km^2

DISCHARGE (m^3/s) MAX _____ MIN _____

Temperature (^oC) _____

COMPOSITION: Bedrock _____ Boulder _____ Coarse _____ Fine _____

Silt & Sand _____ Unclassified _____

Barriers or Points of Difficult Ascent:

passable old sluiceway located at 500 yds.
log jams, but not impassable

SPAWNING DISTRIBUTION

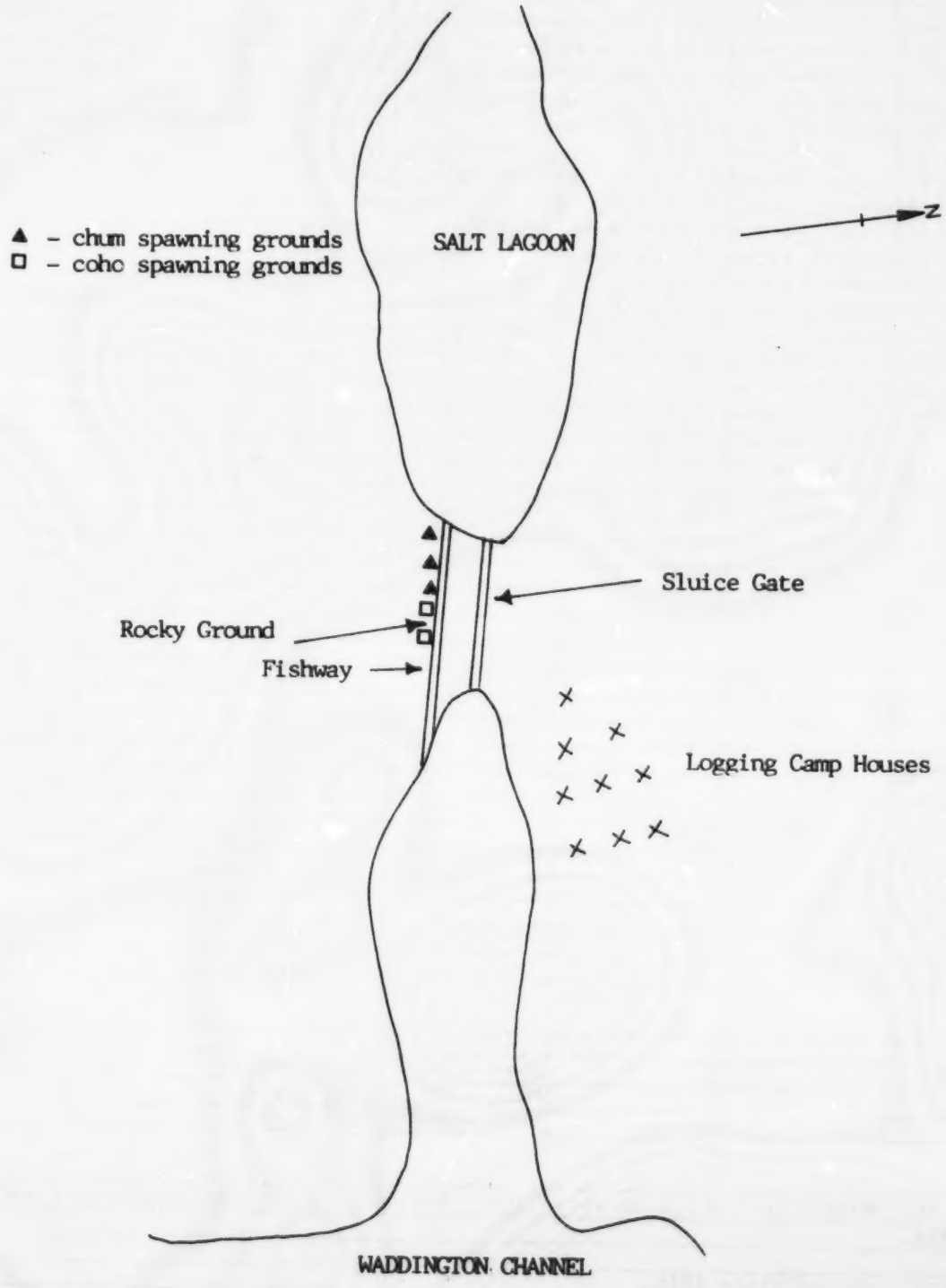
Species	Section of Stream Used
coho	- in small feeder streams to Black Lake
chum	- in outlet of lagoon

GENERAL REMARKS

1967 A very short stream with limited spawning area. Coho sproceed into lake and two small tributary streams.
1969 Water levels are lake fed and were fairly constant during the summer. Lake full of trout
1976 Stream could support a bigger run.
1978 Stream has a fairly constant flow. Beaver dam and log jams were removed and stream stayed clear for migration.

Predation by black bear 1976/77

Sketch of Salt Lagoon, 1964



ESCAPEMENT RECORD FOR (Salt Lagoon Creek, Black Lake Creek)

YEAR	SOCKEYE	CHINOOK	COHO	CHUM	PINK	STEELHEAD
1947			75	1500		
48			750	3500		
49			200	400		
50			NO	RECORDS		
51			400	1500		
52			400	750		
53			200	3500		
54			NOT	INSPECTED		
55			400	25		
56			200	75		
57			400	75		
58			25	25		
59			50	50		
60			400	25		
61			75	25		
62			25	25		
63			200	25		
64			75	25		
65			25	25		
66			25	25		
67			50	200		
68			60	400		
69			300	200		
70			200	50		
71			200	50		
72			100	N/0		
73			50	50		
* 74			N/0	N/0		
75			20	75		
76				200		
77						
78						
79						
80						
81						
82						
83						
84				N/0		
85						

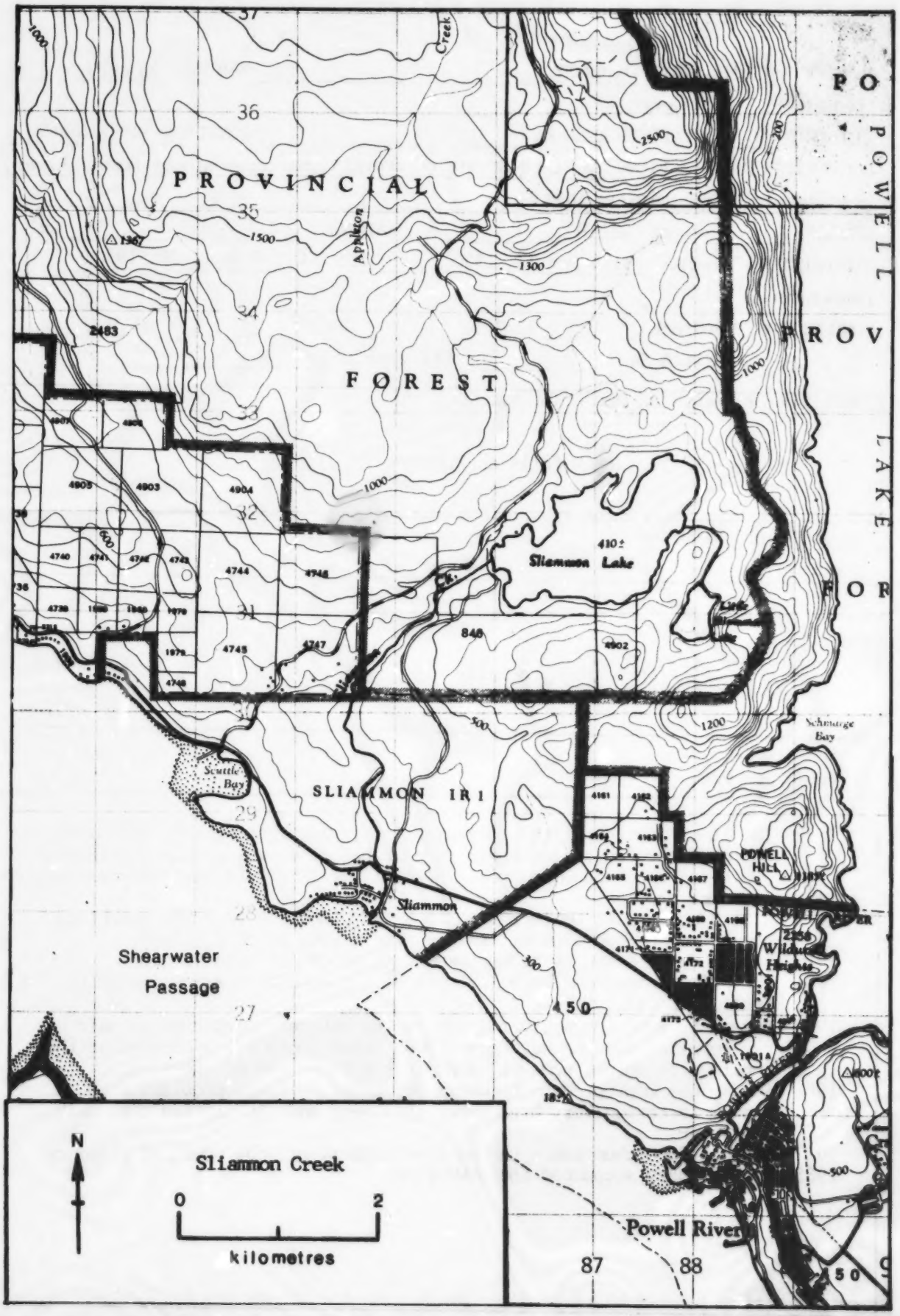
TIMING:

Arrive						
Start			MSep - Nov	MSep - MNov		
Peak			MOct - Dec	LSep - Dec		
End			LOct - Dec	EOct - Dec		

REMARKS

* Coho will move into the system very late. This may be the reason why none were found in 1974.

- No fish observed since 1976.


PROVINCIAL
FOREST
Sliammon Lake
SLIAMMON IR 1
Scuttle Bay
Schnarge Bay
Sliammon
Shearwater
Passage
POWELL HILL
Powell River
Sliammon Creek
0
2
kilometres
N

NAME OF STREAM SLIAMMON CREEK RAB NO. 90-2910

LOCAL NAME (Sliammon River)

DISTRICT 3 STATISTICAL AREA 15 POSITION 49 114 NW.

LOCATION OF MOUTH Flows SW. into Strait of Georgia, NE. of mouth of Powell River, New Westminster Dist.

LENGTH _____ km WIDTH _____ m DRAINAGE _____ km^2

DISCHARGE (m^3/s) MAX 11.4 Nov 27, 1950 MIN 0.028 Sept. 21, 1950

Temperature (^oC) _____

COMPOSITION: Bedrock _____ Boulder _____ Coarse _____ Fine _____

Silt & Sand _____ Unclassified _____

Barriers or Points of Difficult Ascent:

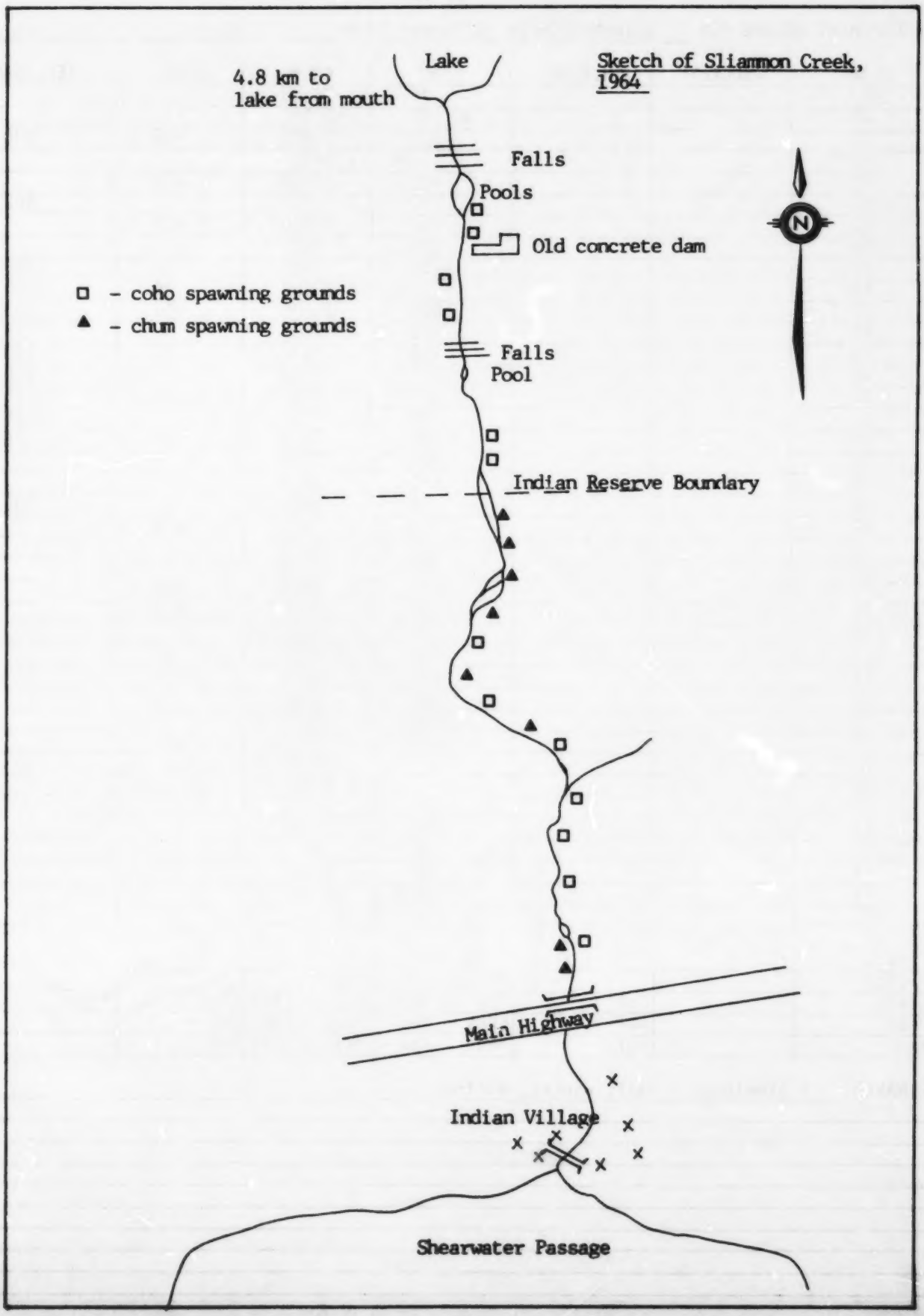
rock falls at 2.80 km

SPAWNING DISTRIBUTION

Species	Section of Stream Used
chum	- throughout to falls

GENERAL REMARKS

1969 The lower portion of this stream is very fast flowing with extensive bouldery stretches. The upper portion has slow moving waters with deep pools and good spawning areas. Several small tributaries produce excellent spawning grounds.
1970 Stream appears to be improving, but is vulnerable to local poaching.
1974 Local Indian Food Fishery is supported mainly by this stream.
1976 Stream was cleared by Enhancement Crew to end of reserve land.
1977 The primary spawning area is in excellent condition and was used to its full potential.
1979 Stream is kept in good condition by the hatchery personnel — main egg supplier for the hatchery. 1980 Local youth are a problem as they continually molest and kill fish in the lower end of the river.
1981 Stream was monitored by hatchery personnel — fewer problems with fish molestation.Very high water this year made it difficult to walk the river.
1982 Another 5000 chum taken in the food fishery off the mouth of Sliammon
1983 Food Fishery accounted for 3000 chum


Sketch of Sliammon Creek, 1964
Lake
4.8 km to lake from mouth
Falls
Pools
Old concrete dam
□ - coho spawning grounds
▲ - chum spawning grounds
Falls Pool
Indian Reserve Boundary
Main Highway
Indian Village
Shearwater Passage
N

ESCAPEMENT RECORD FOR SLIAMMON CREEK (Sliammon River)

YEAR	SOCKEYE	CHINOOK	COHO	CHUM	PINK	STEELHEAD
1947			75	15000		
48			NO REC	NO REC		
49			200	35000	400	200
50			NO	RECORDS		
51			400	15000	400	
52			750	15000		400
53			750	15000	400	
54			200	7500		
55			750	3500	25	400
56			750	15000	25	200
57			400	15000	200	200
58			400	7500		75
59		25	150	4000	50	150
60			75	3500		200
61			200	3500	25	75
62			200	3500		75
63			200	7500	75	75
64			400	7500		
65			400	1500		
66			750	3500		200
67			200	600	N/0	
68			1200	9000		
69		N/0	800	8000		
70			1000	4000	N/0	
71			1000	3000	N/0	
72			600	3500		
73			100	7000		
74			100	5000	N/0	
75			100	4500		
76			100	6000		
77			56	14304		
78				12020		
79				13000		
80				11000		
81			50	12000		
82		2	60	8000		
83			120	16000		
84			120 +	120 +		
85						

TIMING:

Arrive			MOct	Sep		
Start		Jul	Aug - Nov	Sep - ENov	EAug - Sep	*
Peak		Jul	LOct - Dec	LOct - Nov	Sep	
End		Jul	MNov - Jan	MNov - LDec	Oct	

REMARKS * Steelhead - fall, winter, spring.

NAME OF STREAM (Store Creek) RAB NO. -

LOCAL NAME

DISTRICT 3 STATISTICAL AREA 15 POSITION 50° 12' 124° 42'

LOCATION OF MOUTH Waters off Squirrel Cove, Desolation Sound.

LENGTH km WIDTH m DRAINAGE km^2

DISCHARGE (m^3/s) MAX MIN

Temperature (^{o}C)

COMPOSITION: Bedrock Boulder Coarse Fine

Silt & Sand Unclassified

Barriers or Points of Difficult Ascent:

Concrete water supply dam 300 yds from mouth —
Recommend some method for fish to pass the obstruction ('78)

SPAWNING DISTRIBUTION

Species	Section of Stream Used
chum	- even distribution to dam

GENERAL REMARKS

1977 Approx 100 yards above the main road there is a new concrete dam to supply water to Squirrel Cove Store. This has completely blocked further access to chum.

Store Creek
N
0
2
kilometres
NEW WESTMINSTER LAND DISTRICT
SAYWARD LAND DISTRICT
CHANNEL
QUADRA ISLAND
Refuge Lagoon
Junction Point
Boulder Point
Squirrel Cove
Gorge Harbour
Carrington Bay
Seaford

ESCAPEMENT RECORD FOR (Store Creek)

YEAR	SOCKEYE	CHINOOK	COHO	CHUM	PINK	STEELHEAD
1947						
48						
49						
50						
51						
52						
53						
54						
55						
56						
57						
58						
59						
60						
61						
62						
63						
64						
65						
66						
67						
68						
69						
70						
71						
72						
73						
74						
75						
76						
77				37		
78				80		
79				157		
80						
81						
82						
83						
84						
85						

TIMING:						
Arrive				Oct		
Start				Oct		
Peak				LOct		
End				LNov		

REMARKS No fish reported since 1979.

MT. GILBERT
FALCON MTN
MT. SILVER
TAHUMMING MTN
TOBA
INLET
FOREST
Tahumming River
0
10
kilometres

NAME OF STREAM TAHUMMING RIVER RAB NO. 90 - 3210

LOCAL NAME (Graveyard Creek)

DISTRICT 3 STATISTICAL AREA 15 POSITION 50 124 NE.

LOCATION OF MOUTH Flows SE into head of Toba Inlet, Range 1, Coast Dist.

LENGTH _____ km WIDTH _____ m DRAINAGE _____ km^2

DISCHARGE (m^3/s) MAX _____ MIN _____

Temperature (^oC) _____

COMPOSITION: Bedrock _____ Boulder _____ Coarse _____ Fine _____

Silt & Sand _____ Unclassified _____

Barriers or Points of Difficult Ascent:

impassable rock falls at 274m -12m high

SPAWNING DISTRIBUTION

Species	Section of Stream Used
chum	- in deep pools below the falls
pink	- below falls

GENERAL REMARKS

1965 Very small rocky creek — available spawning grounds for only 274 m. Rough, bouldery stretches and rock obstructions.

1967 Water levels low throughout most of season rising to normal during Fall months.

1971 6.7 km of excellent gravel above falls. Valley to be logged this season.

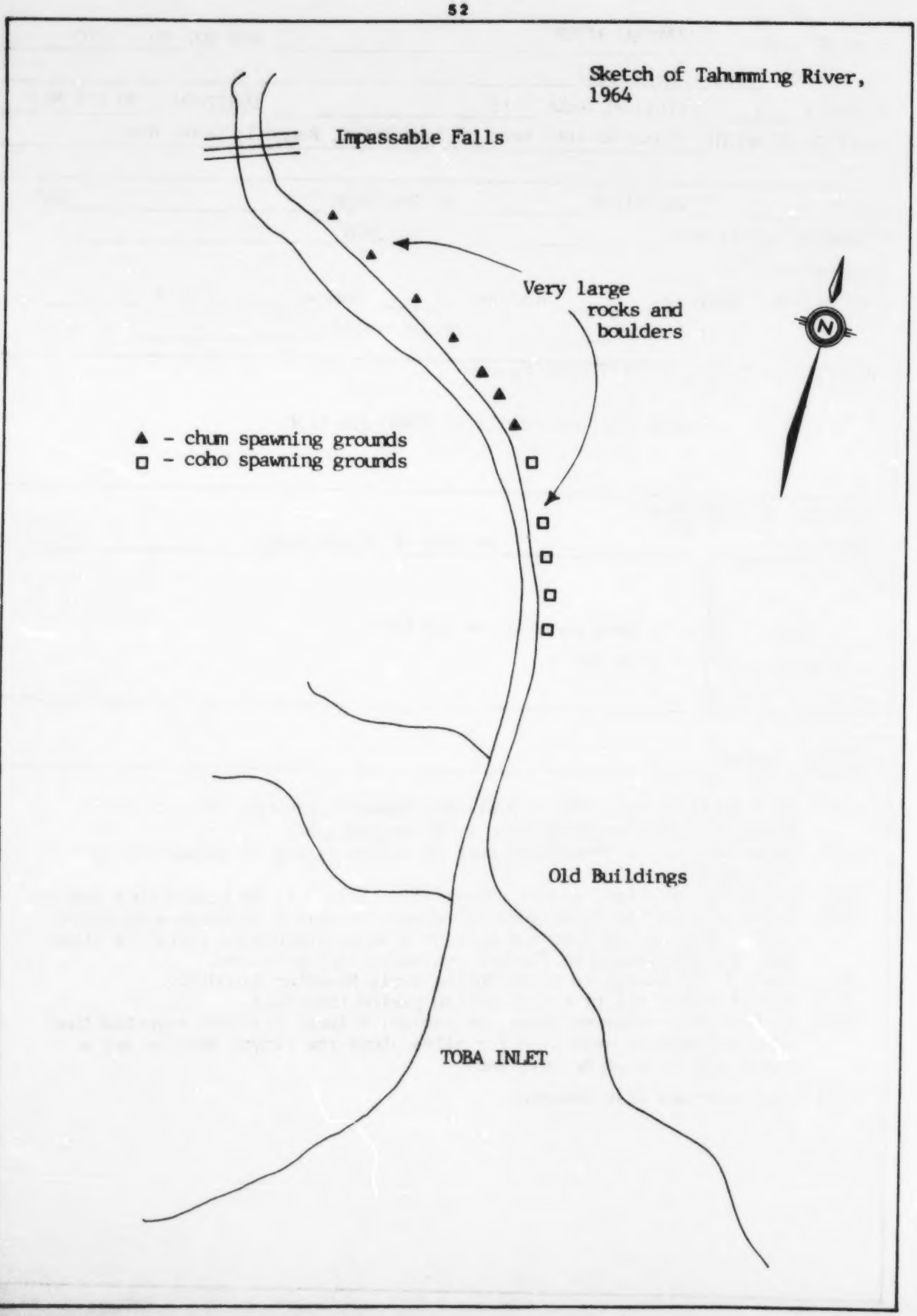
1973 Pinks arrived for first year on record. Beautiful spawning area above falls. Size of run does not warrant a major expense to install a fish-way, but this should be further evaluated in the future.

1975 Heavy flood damage to river during early November flooding.

1977 Turbid during all of the migration period this fall.

1978 No fish ever reported above the canyon. A local resident reported that coho and chinook were seen for miles above the canyon when he was a child. Will have to be verified.

1974 Last year any fish observed.


Sketch of Tahumming River, 1964
Impassable Falls
Very large rocks and boulders
▲ - chum spawning grounds
□ - coho spawning grounds
N
Old Buildings
TOBA INLET

ESCAPEMENT RECORD FOR TAHUMMING RIVER (Graveyard Creek)

YEAR	SOCKEYE	CHINOOK	COHO	CHUM	PINK	STEELHEAD
1947				400	400	
48			NO	RECORDS		
49				400	400	
50			NO	RECORDS		
51				400		
52				400		
53				400		
54			NOT	INSPECTED		
55			750	200	UNK	
56			200	400		
57			400	400		
58			75	75		
59			100	100		
60			75	25		
61			25	25		
62			25	25		
63			25	25		
64			25	25		
65			N/O	N/O		
66			N/O	N/O		
67			N/O	150	N/O	
68			100	100		
69			N/O	150		
70			N/O	150		
71			100	50		
72			N/O	100		
73			N/O	100	500	
74			N/O	UNK	N/O	
75			N/O	N/O	N/O	
76						
77			NO	RECORDS		
78			N/O	N/O		
79						
80						
81						
82						
83						
84						
85						

TIMING:

Arrive				ESep - Oct		
Start			Sep	ESep - Oct		
Peak			Nov	LOct - Nov		
End			Dec	MNov - Dec		

REMARKS

- The logging company road upstream now makes passage for inspection possible. (1974) No fish reported since 1973.

TOBA INLET
PRYCE CHANNEL
HOMFRAY CHANNEL
WEST REDONDA
EAST REDONDA
REDONDA ISLANDS
Pendrell Sound
Desolation Sound
Refuge Cove
Squirrel Cove
Seaford
Cortes Bay
GIFFORD PENINSULA
Bliss Landing
BALASPINA PENINSULA
ULLOA
Lund
Savary I
Savary Island
Malaspina Pen
Theodosia Arm
Theodosia River
POWELL LAKE
Powell Lake
Lake
Manson Passage
West Passage
TOBA PROV FOREST
COAST DISTRICT
NEW WESTMINSTER DISTRICT
0
10
kilometres

NAME OF STREAM THEODOSIA RIVER RAB NO. 90-3000

LOCAL NAME (Twin Rivers, Farm Creek East Fork)

DISTRICT 3 STATISTICAL AREA 15 POSITION 50 124 SW

LOCATION OF MOUTH Flows SW into Theodosia Inlet, New Westminster Dist.

LENGTH _____ km WIDTH _____ m DRAINAGE _____ km^2

DISCHARGE (m^3/s) MAX 52.7 Oct. 21, 1965 MIN 0.038 Aug 13, 1979

Temperature (^oC) _____

COMPOSITION: Bedrock _____ Boulder _____ Coarse _____ Fine _____

Silt & Sand _____ Unclassified _____

Barriers or Points of Difficult Ascent:

Series of impassable falls at 7 km — some passable log jams. 1968 reported several jams maintained as they help to control flow.

SPAWNING DISTRIBUTION

Species	Section of Stream Used
coho	- in upper reaches and side channels
chum	- in lower reaches, on well gravelled stretches of river
pink	- in lower reaches, on well gravelled portions of river

GENERAL REMARKS

1960/69	Water diversion affects this stream, but McMillan Bloedel are required to increase volume when necessary to protect salmon spawners (62).
1968	A very early run of chum appeared in this stream this year. Water levels were unusually good and no crowded conditions were observed. Several large partial log jams serve to control the flow of this stream. The Provincial Government maintains a metering gauge on this river.
1977	The large diversion of the Theodosia into Olsen Lake and Powell Lake is being studied by Water Rights and a new licence may be issued. The low summer flows are of great concern and should be eliminated.
1978	Coho migrate to beginning of fall reaching the upper river via Twin Creeks, two smaller creeks combining into one about 1.6 km from beach. and joining main river approx 3 km from beach.
1980	This river is very unstable. The main flow has now diverted into what was a flood channel leaving the bottom mile or so of main channel practically dry.
1981	Work is scheduled for next summer to correct the McMillan Bloedel diversion.
1982	Diversion into Olson Lake was re-designed and should provide the Theodosia River with a much more stable summer flow.
1984	Main Theodosia has been diverted at 7 km into Farm Creek. River changes after each heavy rainfall. River in constant change — gravel movement - high water every rainfall.

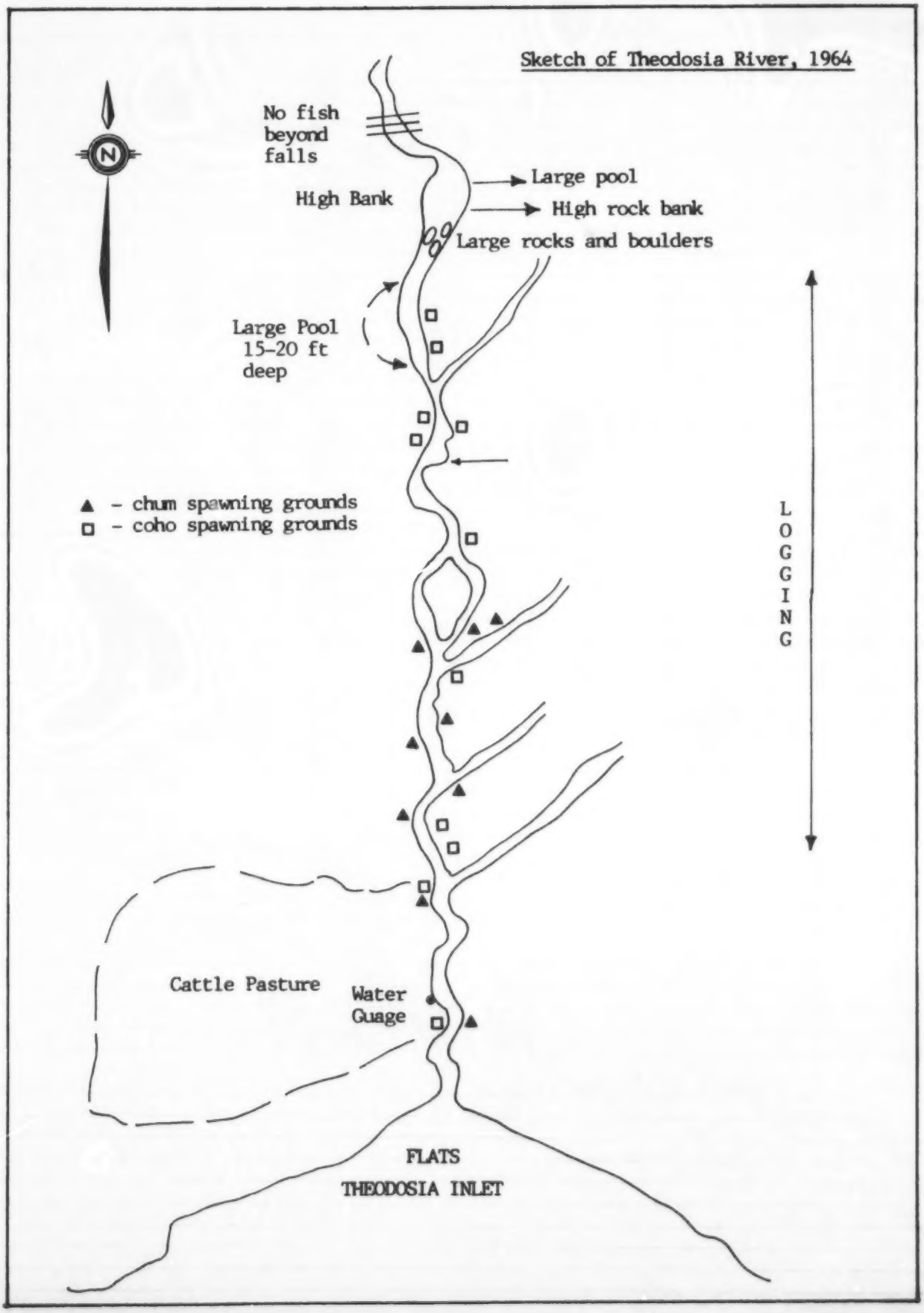
continued.....

THEODOSIA RIVER (Twin Rivers, Farm Creek East Fork)

Physical conditions:

1960/69	Erosion and silting ranging from 10% - 40% — scouring in lower reaches and course changes.
1970/79	High flood waters often change river bed — tree debris results in blockages.
1980	Erosion and silting 60%.
1981	Drastic fluctuations in water levels.
1982	Main river changes constantly in bottom 5 km. Water levels very low during summer.

Predation by bear and gulls.


Sketch of Theodosia River, 1964
N
No fish beyond falls
High Bank
Large pool
High rock bank
Large rocks and boulders
Large Pool 15-20 ft deep
▲ - chum spawning grounds
□ - coho spawning grounds
LOGGING
Cattle Pasture
Water Guage
FLATS
THEODOSIA INLET

ESCAPEMENT RECORD FOR THEODOSIA RIVER

YEAR	SOCKEYE	CHINOOK	COHO	CHUM	PINK	STEELHEAD
1947			1500	1500	750	
48			750	3500		
49			3500	35000	400	
50			NO	RECORDS		
51			3500	3500	3500	
52			7500	35000	200	
53			3500	35000	750	UNK
54			3500	35000	N/0	
55			3500	7500	200	UNK
56			3500	7500	25	UNK
57			3500	7500	750	UNK
58			7500	15000	UNK	
59			700	12000	50	UNK
60			1500	7500		
61			200	1500	25	
62			400	1500	UNK	UNK
63			750	3500	75	UNK
64			3500	3500		
65			3500	3500	N/0	UNK
66			3500	7500	UNK	UNK
67		100	1000	2000	N/0	
68			3000	20000		
69		100	2200	8000		
70		N/0	1200	2200	N/0	
71			2000	2000	150	
72			3000	15000	40	
73			200	2300	N/0	
74		N/0	800	7000	N/0	
75			500	1900	N/0	
76			400	3500		
77			550	1800	35	
78			300	1000	-	
79			600	750	50	
80			500	1000	-	
81	6		150	4500	6	
82			100 +	2000	-	
83	UNK	UNK	N/0	2500	UNK	
84			400	3000		
85						

TIMING:

Arrive			Aug - Sep	Sep		*
Start			LSep - EOct	ESep - EOct		
Peak			LOct - MNov	MOct - MNov		
End			ENov - Jan	LOct - Dec		

REMARKS * Steelhead - fall, spring runs.

TREE FARM LICENCE
Toba Inlet
POWELL
N
Toba River
0
10
kilometres

NAME OF STREAM TOBA RIVER RAB NO. 90-3200

LOCAL NAME

DISTRICT 3 STATISTICAL AREA 15 POSITION 50 124 NE

LOCATION OF MOUTH Flows SW into head of Toba Inlet, Range 1 Coast Dist.

LENGTH 32 km WIDTH m DRAINAGE km^2

DISCHARGE (m^3/s) MAX MIN

Temperature (^oC)

COMPOSITION: Bedrock Boulder Coarse Fine

Silt & Sand Unclassified

Barriers or Points of Difficult Ascent:

log jams and beaver problems in sloughs will be monitored

SPAWNING DISTRIBUTION

Species	Section of Stream Used
chinook	- evenly distributed up to 32 km
coho	- evenly distributed up to 32 km
chum	- up to 26 km
pinks	- up to confluence of Little Toba approx 20 km

GENERAL REMARKS

This is the largest salmon producing stream in the area. Excellent spawning gravel 13 km from mouth — supports mainly pinks. The river is glacial and heavily discoloured making accurate counts impossible.

1951 Seals take a heavy toll on fish.
1953 As this river is always silty, figures are based on fish observed on shoals, small streams and catches.
1968 An excellent escapement of all species of salmon . Chum were particularly heavy. High water during the month of November caused some flooding, but no damage to egg deposits was reported.
1969 Logging operations are now far removed from the lower 16 km of stream.
1971 Large numbers of chum and coho were observed above the 40 km point on November 14th. These fish appeared to be quite fresh. Pinks and Chinook arrived early and were above average in numbers.
1974 Logging camp sport fishery indicates average return of coho and a few chinook. 12,000 chum based on estimate — one late trip.
1975 Chum return was extremely poor and what did arrive was severely damaged by floods. Some gravel removal during winter months on high gravel bars. Chinook and coho spawn probably affected by flooding.
1980 Local loggers catch coho up to 41 km from mouth.

continued.....

continuation

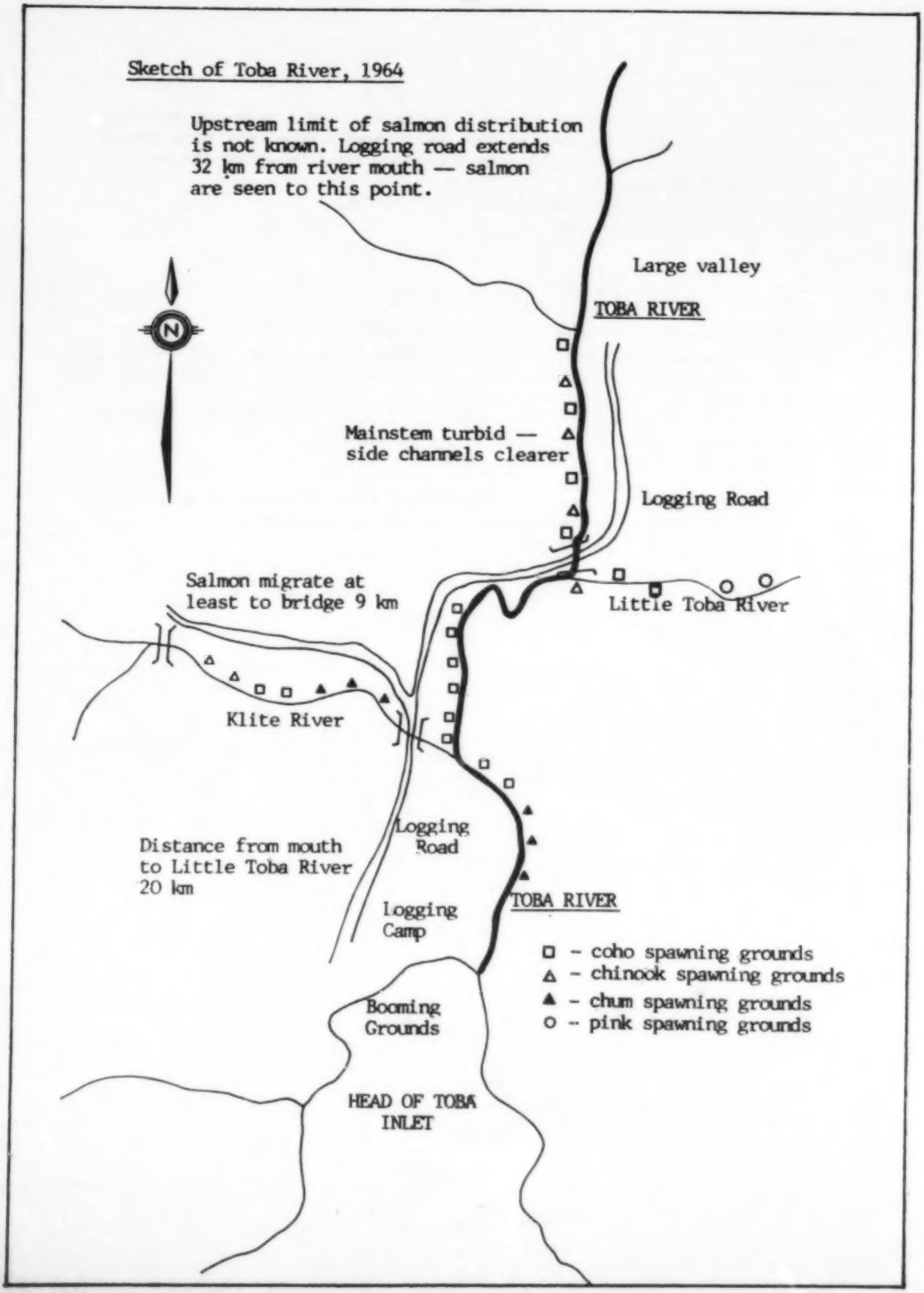
TOBA RIVER

1981 It is felt that this river is used by the fish as a means of getting to its tributaries. Low waters this year showed some very nice gravel beds in this river. An evaluation program should be set up to assess the entire Toba system.
1982 A full time patrolman is needed on this system.
1984 Very high water in October.

Physical characteristics:

1950/59 Silting reported in lower 5 km, water levels normal.
1960/69 Water rises rapidly when snows melt. Some erosion — river banks, for the most part consist of gravel. Water levels fairly constant. Extreme high water levels November (68)
1970/79 Lower 6 km of river is badly silted. 1975 reported severe flooding
1977/78 Water levels above normal during summer months.
1982 Water levels very low during summer and fall.

Predation: Seal have taken a very heavy toll on spawners over the years. Black bear and merganzer were quite destructive.


Sketch of Toba River, 1964
Upstream limit of salmon distribution is not known. Logging road extends 32 km from river mouth — salmon are seen to this point.
N
Large valley
TOBA RIVER
Mainstem turbid — side channels clearer
Logging Road
Salmon migrate at least to bridge 9 km
Little Toba River
Klite River
Logging Road
Distance from mouth to Little Toba River 20 km
TOBA RIVER
Logging Camp
□ - coho spawning grounds
△ - chinook spawning grounds
▲ - chum spawning grounds
○ - pink spawning grounds
Booming Grounds
HEAD OF TOBA INLET

ESCAPEMENT RECORD FOR TOBA RIVER

YEAR	SOCKEYE	CHINOOK	COHO	CHUM	PINK	STEELHEAD
1947		UNK	7500	7500	35000	
48			NO	RECORDS		
49		1500	15000	15000	35000	
50			NO	RECORDS		
51		3500	7500	75000	35000	
52		1500	7500	75000	UNK	
53		1500	7500	35000	35000	
54		3500	15000	35000		
55		3500	15000	7500	15000	
56		1500	35000	15000	200	
57		1500	35000	35000	75000	
58		3500	15000	15000	25	
59		2000	15000	15000	20000	
60		1500	15000	7500		
61		750	3500	75000	15000	
62		1500	7500	3500		
63		3500	15000	1500	35000	
64		3500	15000	7500		
65		3500	7500	7500	3500	
66		3500	15000	7500		
67		10000	10000	8000	10000	
68		8000	12000	20000		
69		4000	10000	2000	5000	
70		12000	12000	2000		
71		10000	10000	10000	6000	
72		6000	12000	14000	N/0	
73		6000	6000	1000	8000	
74		N/0	N/0	12000	N/0	
75		N/0	N/0	1000	8000	
76				1500	-	
77			4000	2000	NO RECORD	
78			N/0	N/0	N/0	
79			UNK	UNK	UNK	
80			NO FISH	SEEN	-	
81			NO FISH	SEEN	-	
82		550	-	2500	-	
83		600	400	10000	UNK	
84		300	100	8000	-	
85						

TIMING:

Arrive			Jul	EAug - Oct	EAug	
Start		Jun - Jul	Jul - Sep	Aug - Oct	EAug	
Peak		Jul - Aug	LJul - Nov	Oct - Nov	Aug - Sep	
End		Sep - Nov	MAug - Dec	LNov - Jan	E-M Sep	

REMARKS

Metric Conversions

CONVERSION FACTORS

The following list of convenient equivalents of measure gives the relationship between imperial units and the International System of Units (SI).

1 inch equals 2.54 cm (centimetres)
1 foot equals 0.3048 m (metre)
1 statute mile equals 1.6093 km (kilometres)

1 cm (centimetre) equals 0.393 70 inch
1 m (metre) equals 3.2808 feet
1 km (kilometre) equals 0.621 37 mile

1 acre equals 43 560 square feet
1 acre equals 0.404 69 ha (hectare)
1 square mile equals 640 acres
1 square mile equals 2.5900 km^2 (square kilometres)
1 square mile equals 259.0 ha (hectares)

1 ha (hectare) equals 10 000 m^2 (square metres)
1 ha (hectare) equals 2.4710 acres
1 km^2 (square kilometre) equals 0.386 10 square mile

1 cubic foot equals 6.2288 imperial gallons
1 imperial gallon equals 4.546 09 L (litres)
1 imperial gallon equals 1.2010 U.S. gallons
1 U.S. gallon equals 0.133 68 cubic foot
1 cubic foot equals 0.068 317 m^3 (cubic metre)
1 m^3 (cubic metre) equals 35.315 cubic feet

1 cubic foot per second for one day equals 1.9835 acre-feet
1 cubic foot per second for one day covers one square mile to a depth of 0.037 19 inch
1 acre-foot equals 1.2335 dam^3 (cubic decametres)
1 m^3/s (cubic metre per second) for one day equals 86.4 dam^3 (cubic decametre)
1 m^3/s (cubic metre per second) for one day covers one square kilometre to a depth of 0.0864 m (metre)

1 foot per second equals 0.6818 mile per hour
1 mile per hour equals 1.467 feet per second
1 m/s (metre per second) equals 3.6 km/h (kilometre per hour)
1 km/h (kilometre per hour) equals 0.2778 m/s (metre per second)

1 cubic foot per second equals 0.028 317 m^3/s (cubic metre per second)
1 m^3/s (cubic metre per second) equals 35.315 cubic feet per second

1 pound equals 0.453 59 kg (kilogram)
1 kg (kilogram) equals 2.2046 pounds

1 short ton (2000 pounds) equals 0.907 18 t (tonne)
1 t (tonne) equals 2204.6 pounds

degrees Celsius = 5/9 (degrees Fahrenheit - 32)
degrees Fahrenheit = 9/5 (degrees Celsius) + 32

FACTEURS DE CONVERSION

Voici une liste des unités de mesure impériales et leurs équivalences dans le Système international d'unités (SI).

1 pouce vaut 2.54 cm (centimètres)
1 pied vaut 0.3048 m (mètre)
1 mille terrestre équivaut à 1.6093 km (kilomètre)

1 cm (centimètre) équivaut à 0.393 70 pouce
1 m (mètre) équivaut à 3.2808 pieds
1 km (kilomètre) équivaut à 0.621 37 mille

1 acre vaut 43 560 pieds carrés
1 acre équivaut à 0.404 69 ha (hectare)
1 mille carré vaut 640 acres
1 mille carré équivaut à 2.5900 km^2 (kilomètres carrés)
1 mille carré équivaut à 259.0 ha (hectare)

1 ha (hectare) vaut 10 000 m^2 (mètres carrés)
1 ha (hectare) équivaut à 2.4710 acres
1 km^2 (kilomètre carré) équivaut à 0.386 10 mille carré

1 pied cube équivaut à 6.2288 gallons impérials
1 gallon impérial vaut 4.546 09 L (litres)
1 gallon impérial équivaut à 1.2010 gallon américain
1 gallon américain équivaut à 0.133 68 pied cube
1 pied cube vaut 0.068 317 m^3 (mètre cube)
1 m^3 (mètre cube) vaut 35.315 pieds cubes

1 pied cube par seconde pendant un jour équivaut à 1.9835 acre-pied
1 pied cube par seconde pendant un jour équivaut à un volume d'un mille carré par 0.037 19 pouce
1 acre-pied équivaut à 1.2335 dam^3 (décamètres cubes)
1 m^3/s (mètre cube par seconde) pour un jour vaut 86.4 dam^3 (décamètre cube)
1 m^3/s (mètre cube par seconde) pour un jour couvre un kilomètre carré à une profondeur de 0.0864 m (mètre)

1 pied par seconde équivaut à 0.6818 mille par heure
1 mille par heure équivaut à 1.467 pied par seconde
1 m/s (mètre par seconde) vaut 3.6 km/h (kilomètre par heure)
1 km/h (kilomètre par heure) vaut 0.2778 m/s (mètre par seconde)

1 pied cube par seconde équivaut à 0.028 317 m^3/s (mètre cube par seconde)
1 m^3/s (mètre cube par seconde) équivaut à 35.315 pieds cubes par seconde

1 livre équivaut à 0.453 59 kg (kilogramme)
1 kg (kilogramme) équivaut à 2.2046 livres

1 tonne courte (2000 livres) équivaut à 0.907 18 t (tonne)
1 t (tonne) équivaut à 2204.6 livres

degrés Celsius = 5/9 (degrés Fahrenheit - 32)
degrés Fahrenheit = 9/5 (degrés Celsius) + 32